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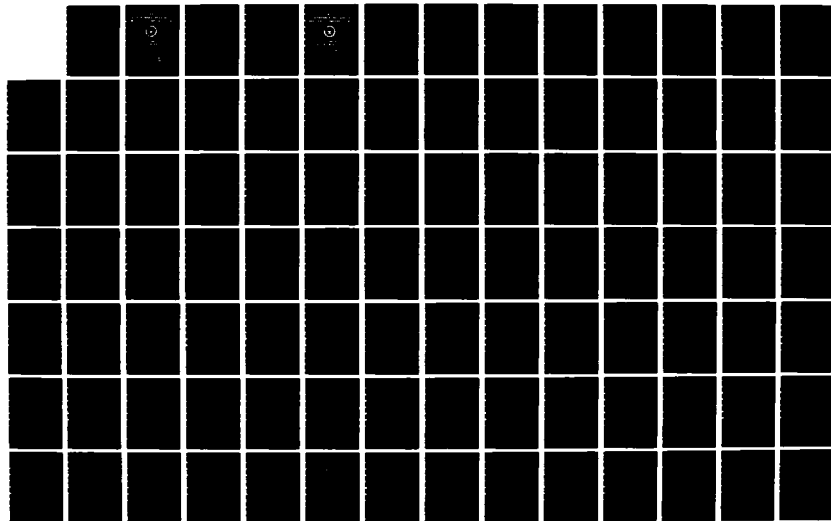
QUADRENNIAL REVIEW OF MILITARY COMPENSATION (5TH)
VOLUME 3 SPECIAL AND INCENTIVE PAYS(U) OFFICE OF THE
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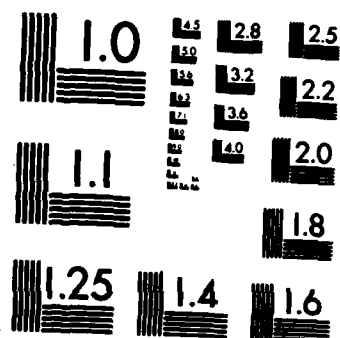
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FIFTH QUADRENNIAL REVIEW OF MILITARY COMPENSATION

AD-A142 912



VOLUME III SPECIAL AND INCENTIVE PAYS

NOVEMBER 1983

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16. SUPPLEMENTARY NOTATION A Quadrennial Review of Military Compensation is required by Title 37, U.S.C. 1008b. The Fifth QRMC was directed by President Reagan in his August 17, 1982 letter to Secretary Weinberger. This volume is part of a multivolume report that includes an Executive Summary, Volume I, IA, IB, IC, II and III.					
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19. ABSTRACT (Continue on reverse if necessary and identify by block number) Volume III of the multivolume report of the Fifth Quadrennial Review of Military Compensation (Fifth QRMC) addresses the Special and Incentive pay portion of this Presentially convened, legislatively mandated assessment conducted in 1983 and early 1984. Although each pay was judged on its own merit, a basic, uniform analytical approach was used in the review to the numerous special and incentive pays. First, it was studied to determine if the pay is necessary for the Uniformed Services to attract and retain quality personnel in sufficient numbers to meet their needs or, in some cases, to provide the proper recognition for an unusual aspect of the duties. Second, the rates of each pay were examined to ascertain if they were properly structured and set at the levels necessary to affect the desired behavior or to provide the proper recognition. The manner in which these two issues were addressed varied in accordance with the amount historical data available, the time since the last adjustment to its rates or its eligibility requirements and the existance of private-sector competition					
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recruiting, authorizations, requirements

BLOCK 19. (Cont.)

for the same manpower resource. Some pays, such as Selective Reenlistment Bonuses, lend themselves to highly sophisticated, statistical analysis techniques, while others, such as Leprosarium Duty Pay, dictated a more intuitive approach.

The volume contains a compilation of the legislative histories of each of the pays, a detailed description of the analytical approach employed, and a comprehensive discussion of the groups' findings and recommendations for change, when the findings so dictated. The information in this volume is presented in such a manner that it is understandable to the average reader yet technically correct and highly revealing to the econometrician.

FIFTH QUADRENNIAL REVIEW OF MILITARY COMPENSATION



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VOLUME III SPECIAL AND INCENTIVE PAYS

NOVEMBER 1983

DEPARTMENT OF DEFENSE
OFFICE OF THE SECRETARY OF DEFENSE

PREFACE

The Nation and its leadership have a responsibility to the men and women in uniform. Without adequate numbers of high-quality personnel, our defense structure is powerless, our sophisticated and expensive equipment useless. Numbers alone, even of the highest quality, are not enough. Our mission readiness and national security rely on the loyalty, dedication, and proper leadership of this professional manpower force. We must be ready to give them the honor and respect that is truly theirs. Compensation is but a part of our appreciation and the overall system of Uniformed Services compensation must be configured to contribute to the mission readiness that is essential to supporting our national security objectives. To assess the effectiveness of the current military compensation system to achieve this goal, the Fifth Quadrennial Review of Military Compensation (Fifth QRMC) was organized in September of 1982. The Fifth QRMC was directed to focus attention on the retirement system, its associated benefits, and the Special and Incentive pay system.

The Fifth QRMC complies with Title 37, United States Code 1008(b). The code requires a complete review every four years to examine the principles of the compensation system and to evaluate their implementation in compensation provided to Uniformed Service members.

President Reagan designated the Secretary of Defense to be his executive agent for the review; he, in turn, instructed the Assistant Secretary of Defense (Manpower, Reserve Affairs & Logistics) (ASD(MRA&L)) to conduct it. On October 1, 1982, a technical staff was officially assembled with members, either full-time or advisory, drawn from all the Uniformed Services. To provide overall policy guidance and to review the study efforts, a Steering Committee was formed. This was composed of the Assistant Secretaries for Manpower from the Military Departments, the Deputy Assistant Secretary of Defense (MRA&L) (Military Personnel and Force Management) (MP&FM), the seven Uniformed Service manpower and personnel chiefs, and the Director, J-1 (Manpower and Personnel) Office of the Joint Chiefs of Staff. The ASD(MRA&L) chaired the Steering Committee, with the DASD (MP&FM) serving as the deputy. The scope of the activities undertaken by the Fifth QRMC can best be understood by reviewing this and related volumes of the final report. The subsequent paragraphs describe the conceptual reference of the work, as well as resources, data sources and analytic approaches used.

In the analyses, the value of total compensation to the servicemember, in Fiscal Year 1982, was used as a point of reference. First, the history and implementation of retirement benefits, pays and incentives were reviewed in detail. Previous studies and resultant proposals to change the retirement system were thoroughly examined. Then, proposed changes in compensation were assessed by evaluating their ultimate impact on force structure, related force effectiveness and resultant costs.

Analysis of the retirement system focused primarily on its effectiveness as a general long-term force management tool, which must attract

and retain the high-quality career force essential for our national security, and support the development of a ready pool of reserve manpower for immediate recall. In a substantial portion of this analysis, alternatives to the existing retirement system were developed and evaluated. An additional focus of this analysis was a consideration of how the retirement system assists in the transition of servicemembers to the private sector upon retirement, and the extent to which it provides adequate compensation when they later reach old age.

The individual Services provided the force structure data which formed the baseline against which to assess the effectiveness of the retirement system and the Special and Incentive pays. These data were constructed in a steady-state mode, using established career field and skill level requirements, and the Fiscal Year 1982 manpower level ceiling. To permit detailed analyses, the data were provided at pay grade and year of service levels of disaggregation. Finance and personnel records, both in the form of automated data and special, subject-specific reports were also provided by the Services. Civilian earnings data were obtained from the Bureau of the Census, Internal Revenue Service and the Social Security Administration. These data formed the basis for comparisons of Service and civilian earnings.

Numerous Federal agencies, professional associations, labor organizations, consultants and businesses in the private sector, and professional researchers, were contacted in the course of the work. They provided invaluable data, shared their experiences in understanding similar issues and often supplied a judicious, critical perspective on our task.

The Fifth QRMC benefited from its access to individuals, both on its staff and in consultative capacities, capable of using many different analytical techniques. Statistical modeling, trend analysis and cost/benefit analysis, among others, were employed in the course of the review. The steady-state personnel flows of alternative force structures, together with the associated costs (i.e., maintenance, Special and Incentive pays, gains, losses, and retirement) were evaluated using a modified Defense Officer Personnel Management System (DOPMS) Model entitled Defense Manpower Static Model (DMSM).

A new and significantly enhanced version of the Annualized Cost of Leaving (ACOL) Model was developed to evaluate retirement system alternatives. It allows for careful examination of the implications of change for all Services, officers and enlisted personnel, as well as for broad occupational and quality groupings, under varying economic assumptions. Results from the modified ACOL were linked to both the DMSM and to the DoD Actuary Retirement Valuation Model (GORGO) to establish resulting alternative force structures and to calculate the force costs, retirement costs and make retiree projections. These results provided the Fifth QRMC with the capability to consider, realistically, force structure and cost issues which would result from the proposed changes to the retirement system.

The associated benefits which encompass the Government-provided estate program were also analyzed. These benefits include Death Gratuity, Burial Expenses/Burial Flag, Dependency and Indemnity Compensation Survivor Benefit Plan, Servicemen's Group Life Insurance, and Social Security. Each benefit was evaluated independently for adequacy and then integrated into the full range of the Estate Program of the Uniformed Services to insure against overlap or duplication of purpose.

The assessment of the current structure of Special and Incentive pays concentrated on their effectiveness as specialized short-term management tools, which must attract and retain personnel in highly technical occupations (critical skills), as well as those working in hazardous or undesirable conditions.

These pays were reviewed by weighing their suitability in meeting stated or legislated goals against their costs. The reviews included examination of the military's competition with the private sector for critical skills, and of private-sector parallels for financial incentives paid to individuals working in hazardous occupations. The complete Special and Incentive pay structure was examined for internal consistency and cost effectiveness. Several issues related to Special and Incentive pays required special attention; these were the payment of multiple pays, the utilization and role of pays in wartime, and the relationship between pays and force quality considerations.

This report represents the final product of the Fifth QPMC. In addition to fulfilling its defined mission, the Fifth QPMC sought to improve compensation system management, proposing changes which will better serve our total and full commitment, and to provide a solid starting point for future reviews. This additional task took the form of archiving extensive documentation, and making provisions to maintain and update analytic models and associated data bases developed in the course of the work. These data are fundamental to any future review of comparable scope.

This review could not have been completed without the tremendous spirit of cooperation, and commitment to fair and open review, that was shown by the Uniformed Services and the many assisting agencies and individuals. A very difficult and complex job was made manageable and productive as a result of their efforts. The true results of the work reported here can be achieved only through acceptance of the recommendations, and subsequent willingness to work towards the passage and implementation of relevant legislation and force management policies.

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OTHER VOLUMES ASSOCIATED WITH SPECIAL AND INCENTIVE PAYS

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- APPENDIX A Letters to Services Announcing Visits
- B Locations Visited
- C Detailed Trip Notes

VOLUME III-B Responses to Draft Issue Papers (Bound copy only)

- APPENDIX A Preliminary Draft Responses
- B For Coordination Draft Responses
- C Responses for Other Issues
- D Responses to Final Draft - Volume III

VOLUME III-C Data Requests and Responses (Microfiche)

- APPENDIX A Data Requests to Services, OASD, and DMDC
- B Suspense List for Data Requests
- C Service and OASD Responses
- D Data Requests to Outside Agencies
- E Outside Agency Responses
- F Other Data Provided by DMDC

VOLUME III-D Additional Data/Background Information/Computer Tape Formats (Microfiche)

- APPENDIX A Computer Tape File
 - 1. Finance Data
 - 2. Personnel Data
 - 3. OASD Data
 - 4. DMDC Data
 - 5. Bureau of Labor Statistics Data
- B Computer Tape Formats
 - 1. Personnel Tape Formats
 - 2. Finance Tape Formats
 - 3. Other Data Information Formats
- C Other Background Information

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Association of Diving Contractors
Association of Naval Aviation
Bureau of Labor Statistics
Central Intelligence Agency
Combat Pilot's Association
Commuter Airline Association of America
Congressional Budget Office
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Council of Economic Advisors

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National Air Transportation Association
National Business Aircraft Associates
National Hansen's Disease Center
National Pilot's Association
National Science Foundation
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New York Bankers Trust
Northwestern University
Nuclear News
Nuclear Regulatory Commission
Oak Ridge Associated Universities
Occupational Safety and Health Administration
Office of Management and Budget
Office of Personnel Management
Piedmont Airlines, Inc.
Professional Pilot Magazine
President's Private Sector Survey Cost Control Group
REHAB, Inc.
Taylor Diving and Salvage Co.
Tennessee Valley Authority
United Airlines, Inc.
U.S. Marshalls Service
U.S. Secret Service
Veterans Administration
Virginia Electric Power Co.
Western Airlines, Inc.

I. SUMMARY OF FINDINGS AND RECOMMENDATIONS

The Fifth QRMCM review and analysis of the overall suitability and the appropriateness of current payment structures of all Special and Incentive pays are summarized below. The general findings and recommendations are presented first, followed by a discussion and summary of each Special and Incentive (S&I) pay.

A. GENERAL.

1. Except for the following, all S&I pays were found to be necessary:
 - Glider Duty Pay
 - Intelligence and Investigator Pay (Proposed)
 - Leprosarium Duty Pay
 - Nuclear Annual Incentive Bonus - recommended to be phased out
 - Proficiency Pay - selected categories
2. Flexibility must be retained for the Services' effective use of S&I pays, especially in view of differing Service supply and demand conditions, e.g., one-year Aviation Officer Incentive Pay contracts or Nuclear Officer Annual Incentive Bonuses.
3. Bonuses should be paid in a lump-sum to be cost effective and achieve the desired behavior.
4. Short-term officer bonuses were considered less effective than desired, e.g., one-year Nuclear Officer Annual Incentive Bonuses.
5. A general updating (increase) of rates resulted for the majority of the pays reviewed.
6. Several pays required restructuring to improve effectiveness.
7. Eligibility criteria was tightened in a few pays to insure proper utilization.
8. The officer/enlisted differential was eliminated for seven of the Hazardous Duty Incentive Pays:

-- Flight Deck Duty	-- Parachute Duty
-- Demolition Duty	-- Toxic Fuels & Propellants
-- Experimental Stress	-- Toxic Pesticides & Dangerous
-- Non-Crewmember Flight Pay	Organisms
9. The newness of certain pays or rates precluded a complete analysis, in some instances.
10. The multiple pay condition clouded the ability to isolate the effectiveness of several pays.
11. The lack of meaningful data limited the analysis of most medical pays.

12. The changing definition of personnel quality, combined with the Services' minimal documentation of specific selectivity, precluded an in-depth discussion of quality-related issues.

13. The continuance/discontinuance of the various S&I pays during war-time is not consistently applied; additional consideration of this issue is warranted.

B. HAZARD RELATED. Pays in this category provide special compensation to members of the Uniformed Services as an incentive to perform hazardous duty required by orders involving certain skills.

1. Air Weapons Controller Flight Pay. The purpose of this pay is to provide an incentive for Air Weapons Control Officers (AWCOs) to voluntarily participate regularly in aerial flight, a hazardous duty, aboard an airborne warning and control system (AWACS) aircraft. It was established in October 1981 to resolve Air Force shortages of experienced flying AWCOs. The recipient's monthly pay is dependent upon the officer's cumulative years of AWCO service, whether performed in the air or on the ground, and grade. However, to qualify for the pay, the officer must be assigned to a flying AWCO position.

a. Findings:

(1) A special pay for flying AWCOs is necessary for the Air Force to attract and retain sufficient volunteers possessing the appropriate experience to meet its needs.

(2) This pay has been in effect for too short a time to realistically evaluate the appropriateness of the rates.

b. Recommendation: Retain AWCO Flight Pay in its current form.

c. Legislative Implications: None.

d. Minority Position: None.

2. Demolition Duty Pay. The purpose of Demolition Duty Pay (DDP) is to provide an incentive for personnel to perform hazardous duty involving the use or rendering safe of demolitions. Established as a Hazardous Duty Incentive Pay in 1949, DDP has undergone no major changes in structure and only minor changes in rates since that time. The majority of personnel receiving this pay perform duties involving explosive ordnance disposal (EOD), a field of increasing size, complexity, and importance.

a. Findings:

(1) A valid need for Demolition Duty Pay currently exists and will exist in the foreseeable future.

(a) Demolition duty, particularly in the explosive ordnance disposal (EOD) field, exposes personnel to greater risks than those encountered by most Service personnel.

(b) Enlisted manning in demolition fields, especially EOD, is below required levels.

(c) Low attraction of personnel to the demolition fields is a primary cause of undermanning.

(d) High attrition in EOD training is also a major cause of undermanning.

(e) Retention of personnel in demolition fields is generally satisfactory.

(2) Current rates of Demolition Duty Pay are generally adequate to compensate for the hazards of demolition duty.

(a) The rate of DDP should be uniform for officer and enlisted personnel.

(b) A DDP rate of \$110 per month for both officer and enlisted personnel is currently appropriate.

(c) Judicious use of other Special and Incentive pays, i.e., Enlistment Bonuses, Selective Reenlistment Bonuses, and Special Duty Assignment Pay for members outside the SRB window, along with other management actions should continue in order to resolve manning, attraction and retention problems and maintain satisfactory retention levels.

b. Recommendations:

(1) Continue Demolition Duty Pay.

(2) Amend Title 37 to entitle both officer and enlisted personnel to \$110 per month for performance of demolition duty.

c. Legislative Implications: Amend 37 U.S.C. 301(c) (1) to increase the enlisted rate to \$110.

d. Minority Positions:

(1) The Navy prefers rates scaled by pay grade which they consider necessary to obtain volunteers in the required numbers and quality.

(2) The Air Force believes DDP should be incentive-based versus hazard-based; therefore, the officer/enlisted differential should remain. The officer rate proposed was \$165 per month.

3. Experimental Stress Duty Pay. The purpose of Experimental Stress Duty Pay is to provide an incentive to uniformed personnel for the performance of hazardous duty required by orders involving acceleration or deceleration testing, thermal stress experiments, and high or low pressure chamber duty. The pay was established in 1955, as an addition to the Hazardous Duty Incentive Pays, for duty as a low pressure inside-chamber observer or as a human acceleration or deceleration experimental subject. The change was in recognition that these duties are dangerous to health, or in some instances to life, and subject the volunteers to considerable discomfort. Thermal stress and high pressure chamber duties were added to the group of Experimental Stress Duties in 1957 and 1963, respectively.

a. Findings:

(1) There is a need to provide special compensation to personnel performing duties involving acceleration/deceleration testing, thermal stress experiments, and high or low pressure chamber duty.

(a) The Services are obtaining sufficient volunteers for acceleration/deceleration and thermal stress duties, both of which are limited in duration.

(b) Low attraction to pressure chamber duties contributes to undermanning in the Navy.

(c) Retention rates of pressure chamber personnel in the Air Force and the Navy for both officer and enlisted are below desired levels.

(2) Current rates of payment are generally adequate to compensate for the hazards and degree of incentive associated with experimental stress duty and to provide an incentive.

(a) Officer and enlisted personnel should receive equal compensation for exposure to experimental-type duties.

(b) An appropriate rate for both officer and enlisted personnel receiving Experimental Stress Duty Pay is \$110 per month.

b. Recommendations:

(1) Retain Experimental Stress Duty Pay for personnel performing duties involving acceleration/deceleration testing, thermal stress experiments, and high or low pressure chamber duty.

(2) Increase the enlisted rate to \$110 per month.

c. Legislative Implications: Amend 37 U.S.C. 301(c)(1) to increase enlisted Experimental Stress Duty Pay rates to \$110 per month.

d. **Minority Position:** Both the Navy and the Air Force do not believe that officer and enlisted Hazardous Duty Incentive Pay rates should be equalized. The pay, they believe, should provide the proper inducement for individuals to undertake and continue in these duties. The Navy prefers rates scaled by pay grades which they consider to obtain volunteers in the required numbers and quality. The Air Force stated that providing a greater incentive to officers is consistent with the greater responsibilities of an officer in an operational setting.

4. **Flight Pay (Crewmember/Non-Crewmember).** The purpose of this pay is to provide an incentive to Uniformed Services personnel, who do not otherwise qualify for Aviation Career Incentive Pay (ACIP), for the frequent performance of hazardous duty required by orders involving aerial flight. Originally no distinction was made between crew/non-crewmembers or rated/non-rated officers. The differentiation between flying (crew) and non-flying (non-crew) personnel was established in 1933 as an economy measure. In 1974, ACIP was specifically designed to address the problems associated with rated/aeronautically designated officers. At the same time, authority for officers was removed from Crewmember Flight Pay, necessitating the payment of non-rated officer crewmembers as non-crewmembers. Finally, in 1981, AWCO Flight Pay was created for this specific category of non-rated flying officer. Currently, Crewmember Flight Pay is authorized only for enlisted personnel and is based upon grade and length of service. Rates range between \$83 and \$131 per month. Non-crewmember levels are set at \$83 for enlisted members and \$110 for officers.

a. **Findings:**

(1) **Crewmember Flight Pay:**

(a) The Services require an air crewmember incentive pay to attract and retain volunteers in sufficient quantity to meet their needs.

(b) The current rates are too low and distributed across too many steps to provide an effective incentive.

(c) Reestablishment of Officer Crewmember Flight Pay is warranted.

(2) **Non-crewmember Flight Pay:**

(a) Sufficient potential hazard exists to warrant an additional pay for those personnel who participate in frequent aerial flights on a non-crewmember basis.

(b) Although a need for an incentive exists to some extent, the dominant factor associated with non-crewmember duties is the hazard associated with performing tasks in the air, rather than on the ground. Therefore, a flat rate of \$110 per month is sufficient to recognize the risk and serve as an incentive for this category of officer and enlisted flyers.

b. Recommendations:

(1) Crewmember Flight Pay:

(a) Compress and raise the FY82 enlisted crewmember rates as proposed in Table 8 of the study.

(b) Reestablish officer Crewmember Flight Pay in accordance with the schedule proposed in Table 9 of the study.

(2) Non-Crewmember Flight Pay: Raise the enlisted rate to equal the current officer non-crewmember rate of \$110 per month.

c. Legislative Implications:

(1) Amend 37 U.S.C. 301(b) to increase rates for enlisted crewmembers to a maximum of \$200 based upon pay grade.

(2) Amend 37 U.S.C. 301(b) to include officer crewmember pay authority to a maximum of \$250 based upon pay grade.

(3) Amend 37 U.S.C. 301(c)(1) to increase enlisted noncrewmember rate to \$110.

d. Minority Position: Air Force and Navy object to the elimination of the officer/enlisted differential for non-crewmembers (recommendation b.(2)). The Air Force suggested rates of \$165/\$110. The Navy believes that incentive is required to continue to attract highly qualified volunteers. Flat rates of \$150/\$110 are considered by the Navy to be necessary to provide that incentive.

5. Flight Deck Duty Pay (FDDP). The purpose of FDDP is to recognize that individuals who perform tasks on the flight deck of a sea-going vessel, during flight operations, are exposed to a greater risk than is the typical servicemember. Although FDDP was originally restricted to flight deck crew of fixed-wing aircraft carriers, eligibility was extended to personnel performing similar duty aboard any ship which accomplished a minimum number of aircraft launches and recoveries. This modification to the qualifying criteria was a result of the expanding role of helicopters in Naval warfare. The Department of the Navy is the only user of FDDP at this time.

a. Findings:

(1) Sufficient hazard exists to warrant a special Hazardous Duty Incentive Pay.

(2) Since the performance of flight deck duty is generally nonvoluntary in nature, the dominant feature of this pay is the hazard, not the incentive.

(3) Officer and enlisted personnel are exposed to the same potential hazard.

(4) The rate of \$110 per month for both officers and enlisted is sufficiently high to achieve the purpose of this pay.

b. Recommendation: Eliminate the officer/enlisted differential associated with this pay by setting the monthly rate at \$110 per month for all.

c. Legislative Implications: Amend to 37 U.S.C. 301(c)(1) to increase enlisted rate to \$110 per month.

d. Minority Position: None.

6. Glider Duty Pay. Glider Duty Pay was established to attract personnel to service involving substantial danger. Its original primary purpose was to persuade personnel to volunteer for and remain in duties involving the frequent and regular participation in glider flights. In enacting Glider Duty Pay in 1944, Congress' intent was to place the glider units, who were subject to hazards comparable to those of personnel currently receiving flight and parachute pays, on parity with the pay of the air forces and paratroopers of the other Services. Gliders went out of operational service in the early 1950's and no funds have been expended for Glider Duty Pay for over 25 years. The regulation governing administration procedures was rescinded in 1955 and has never been replaced.

a. Findings:

(1) Gliders have not been in use since the 1950's, with the exception of limited use in training scenarios.

(2) There are no current operational plans for future glider flights.

(3) No personnel have received Glider Duty Pay since the 1950's.

(4) Nonaviator-rated officer personnel could be assigned to duties involving glider flights; however, this has occurred only once in the past 25 years.

(5) Enlisted personnel involved in glider duty are authorized crewmember or non-crewmember hazardous duty incentive pay in Title 37, United States Code, clause (1) and (2) of section 301(a).

b. Recommendation: Repeal the provision referring to duty in gliders.

c. Legislative Implications: Repeal 37 U.S.C. 301(a)(3) containing reference to duty in gliders.

d. Minority Position: None.

7. Leprosarium Duty Pay. The purpose of this pay is to provide an incentive for personnel to volunteer for hazardous duty involving intimate contact with persons afflicted with leprosy (Hansen's Disease). The Public Health Service, which staffs the only existing federal leprosarium, the National Hansen's Disease Center, Carville, LA, is the sole user of this pay.

a. Findings:

(1) While the probability of being infected by Hansen's Disease is higher for the attending staff than that of the endemic population, the low pathogenicity, i.e., the disease-producing capacity of the microorganism, coupled with the tightly controlled clinical conditions in which the medical officers perform their duties, results in a considerably less hazardous working environment than has been true in the past. Consequently, individuals who, in a hospital setting, have intimate contact with persons afflicted with Hansen's Disease are not exposed to an unreasonable hazard.

(2) The Uniformed Services are not experiencing significant problems in attracting or retaining quality personnel at the Federal leprosaria.

(3) Program Costs are approximately \$33,000 per annum.

b. Recommendation: Eliminate Leprosarium Duty Pay. Repealing legislation should include a provision to allow those individuals receiving LDP at time of enactment to continue to receive the pay for the duration of the qualifying assignment.

c. Legislative Implication: Repeal provision 301(a)(5) of 37 U.S.C. but allow for continuous receipt of pay until individuals drawing the pay at the time of the legislative action terminate their qualifying assignments.

d. Minority Position: None.

8. Parachute Duty Pay. Parachute Duty Pay serves as a management tool to assist the military services in attracting individuals to assignments that imply substantial danger. The primary purpose of Parachute Duty Pay is to provide an incentive to those uniformed personnel for the performance of hazardous duty required by orders involving parachute jumping. When rates were initially set by Congress, officer rates were based on both the hazards of flying and parachuting since each was involved. However, this rationale was not used in establishing enlisted rates as Congress applied a "properly compensated" standard to enlisted personnel setting the rate at one-half the rate for officers. In 1948, the Hook Commission downplayed the theory of payment for the risk and indicated that the pay's primary purpose was as an incentive to volunteer for and remain in a hazardous duty.

a. Findings:

(1) Parachute duty is sufficiently dangerous to warrant a special pay for hazardous duty.

(2) Adequate data is not available to clearly determine if actual manning problems exist; however, if isolated manning problems are present, they are best handled with incentive pays designed to eliminate significant shortages, such as the SRBs. If it is desirable to recognize achievement of unusual skill levels or responsibilities, then the proposed Special Duty Assignment Pay (replaces Proficiency Pay) should be used.

(3) An appropriate amount for performing basic parachute duty is \$110 per month. This rate should be the same for officer and enlisted jump personnel since they are exposed to the same risks.

(4) High Altitude, Low Opening (HALO) jumpers are exposed to significantly increased risks and should receive compensation equal to regular jump pay plus 50%.

b. Recommendations:

(1) Retain Parachute Duty Pay.

(2) Compensate for added responsibilities in isolated positions, i.e., Jumpmasters, through incentive pays designed to eliminate shortages such as the proposed Special Duty Assignment Pay (replaces Proficiency Pay).

(3) Increase enlisted Parachute Duty Pay rates to \$110 per month, eliminating officer and enlisted rate differentials.

(4) Add a provision to Title 37 U.S.C. 301 to compensate HALO jumpers at a rate of 50% above basic jumpers.

c. Legislative Implications:

(1) Amend 37 U.S.C. 301(c)(1) to increase enlisted rates to \$110.

(2) Add provision to 37 U.S.C. 301 to compensate HALO jumpers at a rate of 50% above basic jumpers.

d. Minority Position: The Navy and the Air Force do not concur that the officer/enlisted differential should be eliminated. The Navy proposed variable, by grade rates which they believe are necessary to attract the proper volunteers. The Air Force believes that providing a greater incentive to officers is consistent with the greater responsibilities of an officer in an operational setting.

9. Toxic Fuels and Propellants (TF&P) Exposure Pay. This relatively new pay provides an incentive to service personnel performing hazardous duties involving the servicing of aircraft or missiles with highly toxic fuels or propellants. Approximately 600 servicemen, predominantly Air Force, qualify for the pay. This number is projected to remain generally constant through the foreseeable future. Recent implementation of this pay precluded an in-depth analysis.

a. Findings:

(1) There is currently a need to provide special compensation to personnel performing duty in the TF&P field.

(a) TF&P duty exposes personnel to greater risks than those normally encountered by most service personnel.

(b) Manning levels within the field are satisfactory.

(2) The rates of TF&P Pay are generally believed to be adequate.

(a) Officer and enlisted personnel serving in the TF&P field should receive equal compensation for exposure to TF&Ps.

(b) The effectiveness of TF&P Pay rates cannot be determined because of the recent authorization of the pay. However, \$110 per month for both officer and enlisted personnel appears to be appropriate at this time.

(3) Certain personnel in the chemical munitions field risk exposure to chemicals, of an equal or greater toxicity than many highly toxic fuels and propellants, for which no hazardous duty incentive pay entitlement exists.

b. Recommendations:

(1) Continue Toxic Fuels and Propellants (TF&P) Exposure Pay.

(2) Amend Title 37 to:

(a) Entitle both officer and enlisted personnel to \$110 per month for performance of TF&P duties.

(b) Include duty involving the handling of chemical munitions within the definition of hazardous duties.

c. Legislative Implications: Amend 37 U.S.C. 301(c)(1) to increase enlisted rates to \$110 per month and to include duty involving handling chemical munitions. Amend 37 U.S.C. 301(a)(12) to include duty involving the handling of chemical munitions.

d. Minority Position: Navy recommends a flat rate of \$125.00 per month.

10. Toxic Pesticides and Dangerous Organisms Exposure Pay (TP&DO). The purpose of this pay is to provide an incentive to personnel required to perform hazardous duties involving highly toxic pesticides or live, dangerous viruses or bacteria. This pay was only recently implemented, in May 1983. Payment to a limited number of personnel under the Toxic Pesticides provision is expected, while payments to personnel under the Dangerous Organisms portion of the law is not expected in the foreseeable future, although applications of this provision may develop. The relative newness of this Hazardous Duty Incentive Pay precluded a full evaluation of the effectiveness of the pay.

a. Findings:

(1) There is a need to provide special compensation to personnel performing duty involving highly toxic pesticides. Duty requiring the use of pesticides of high acute toxicity exposes personnel to risks greater than those normally encountered by most Service personnel.

(2) The current Executive Order governing the payment of Dangerous Organisms Hazardous Duty Incentive Pay provides reasonable criteria for receipt of this pay.

(3) Although there is currently no demonstrated need to provide special compensation to personnel working with dangerous organisms, future applications for this pay may yet evolve.

(4) No basis yet exists to evaluate the adequacy of the pay rates for these areas; however, the rate should be consistent with other payments to personnel required to frequently expose themselves to uniquely hazardous conditions.

b. Recommendations:

(1) Continue Toxic Pesticides and Dangerous Organisms Exposure Pay (TP&DO).

(2) The rate of TP&DO Pay should be consistent with the rates for other Hazardous Duty Incentive Pays.

c. Legislative Implications: Amend 37 U.S.C. 301(c)(1) to increase the enlisted rate to \$110 per month.

d. Minority Position: The Air Force believes that in developing the implementing Executive Order, OSD has an excessively restrictive interpretation of the skills eligible for coverage.

C. INCENTIVE. This category of pays provides special compensation for the purpose of increasing the ability of the Uniformed Services to attract and retain personnel in certain skills.

1. Aviation Career Incentive Pay (ACIP). The purpose of ACIP is to provide an incentive for officers of the Uniformed Services to volunteer for and remain in the field of aviation on a career basis. Although it shares a common origin with Crewmember Flight Pay, there are striking differences. Rated/aeronautically designated officers (except Flight Surgeons) who perform the minimum years of operational flying duty by specified points in their careers (gates) are entitled to receive ACIP on a continuous basis, irrespective of their flying status. Flight Pay is awarded only when an individual is assigned to a position requiring flying and a minimum number of flight hours are actually performed in the given month. In addition, the level of ACIP payment is based upon length of aviation service (except beyond 25 years), not grade and length of active service. ACIP was structured in this manner, primarily in response to serious losses of experienced pilots immediately following termination of obligated service. Naval Flight Officers/Navigators were experiencing similar, though less severe, manning problems. The rates were increased to their current levels ranging from \$125 to \$400 monthly by the Military Personnel and Compensation Amendments of 1980, in recognition of the deterioration of the incentive value of ACIP since its inception in 1974.

a. Findings:

(1) ACIP is necessary to maintain the Services' ability to attract and retain career aviators in sufficient quantity and quality to meet their needs.

(2) The full effects of the current ACIP rates on attraction and retention are not yet known; however, the following conclusions can be drawn:

(a) The rates are sufficient to maintain current inventory-to-authorization ratios through FY87. However, if the major airlines begin to hire new entrants to the pilot pool in significant numbers, as is expected to happen no later than 1990, the current ACIP rates may not be able to prevent serious losses.

(b) ACIP in itself is not sufficient to support significant growth. For example, some of the aviator shortfalls are not a function of continuation, but of accession policies (0-1/0-2), and, therefore, cannot be corrected by means of ACIP. Other shortages (0-3 and above) exist in spite of ACIP. This situation may happen when authorizations increase at a higher rate than inventory over an extended period of time, necessitating exceptionally high continuation rates or, when the type of aviation duty to be performed is viewed as particularly unattractive. In these cases, other force management tools in addition to ACIP must be employed.

(c) The rates are targeted toward the appropriate length-of-service cells.

(3) The ACIP gate system is an effective means of encouraging

officers to participate in the maximum operational flight time that their respective Services' manpower structures allow.

b. Recommendations: Re-evaluate the effectiveness of the rates of ACIP no later than the end of FY86.

c. Legislative Implications: None.

d. Minority Position: None.

2. Aviation Officer Continuation Pay (AOCP). Established as a supplement to Aviation Career Incentive Pay (ACIP), AOCP's purpose is to help alleviate, when needed, current or projected shortages of career officers in aviation specialties determined by the Secretary of the Service concerned to be critical. Authorized in 1981, AOCP consisted of payments of up to four months' basic pay for each year a qualified officer agrees to remain on active duty beyond the expiration of his obligated service. Spurred by shortages of pilots and navigators/naval flight officers (NFOs), AOCP was additional to any other pay and allowances, including reduced ACIP, to which an officer was entitled. The bonus was paid to Navy and Marine Corps aviators in FY81 and FY82. The Air Force and Army supported AOCP but believed that their particular aviator shortages would be solved by the use of increased ACIP rates and internal management programs. Although not currently in use, AOCP was examined to determine its effectiveness in decreasing aviator shortages and its appropriateness for future use.

a. Findings:

(1) AOCP for the Navy has been effective in terms of retention and cost avoidance. Both pilots and NFOs should continue to receive AOCP until inventory levels are adequate. Aviator inventory levels should be reviewed annually to determine its continued need.

(2) Although AOCP for the Marine Corps assisted in retaining experienced pilots, it will not solve current Marine Corps shortages. Analysis indicates that AOCP is not currently appropriate for Marine Corps pilots and NFOs. However, pilot and NFO inventories should be reviewed periodically to determine the future need of AOCP in preventing or correcting mid-career shortages.

(3) Payment of AOCP to aviators with more than 11 years of service did not significantly decrease aviator shortages. Unless retention becomes a problem in these years of service (YOS) cells, payment should be limited to a single AOCP bonus to aviators with 6 through 10 years of service. However, it may become necessary to offer a second bonus opportunity in the 10-15 YOS cells during periods of increased airline hiring.

(4) One- and two-year contracts are not an effective means of increasing retention in the critical mid-career years (6-10 YOS). Contracts in these YOS cells should be established at 3- and 4-year minimum commitments.

(5) Lump-sum payments appropriately discounted would be more cost effective and more productive than the anniversary payment schedule.

(6) If ACIP rates are adjusted for non-bonus recipients, ACIP levels for AOCB recipients should be reviewed.

(7) Data on aviation communities should be maintained to enable evaluation of bonus applicability to the various communities.

(8) AOCB should be continued for future use, when other actions are not effective, to assist in alleviating Service aviator shortages.

b. Recommendations:

(1) Continue AOCB to Navy Pilots and NFOs until inventory levels are adequate.

(2) Discontinue offering new AOCB contracts to Marine Corps Pilots and NFOs until necessary to prevent or correct future mid-career shortages.

(3) Amend Title 37 U.S.C. 301b(a)(4) and 301b(a)(5) to limit AOCB eligibility to aviators with 6 through 10 years of service and establish 3- and 4-year minimum contract lengths.

(4) Pay AOCB as a lump-sum bonus.

(5) Maintain data by aviation community to enable evaluation of bonus applicability to the various communities.

(6) Establish a periodic review of AOCB and aviator inventories to determine if eligibility criteria are valid and if further use of AOCB is necessary to prevent or correct mid-career shortages of pilots, navigator/NFOs or both, in any service.

c. Legislative Implications:

(1) Amend 37 U.S.C. 301b(a)(4) to limit AOCB eligibility to aviators with 6 through 10 years of service.

(2) Amend 37 U.S.C. 301b(a)(5) to establish 3 and 4 years as the minimum contract lengths.

d. Minority Position: None.

3. Special and Continuation Pays for Dentists. The purpose of these pays is to provide additional compensation to military dentists, thereby increasing the ability of the Uniformed Services to attract and retain volunteers in the discipline of Dentistry. Additional pay for dentists began in 1947 as a \$100 per month increase over basic pay and increased to

its current maximum of \$350 per month plus 4 months' FY80 basic pay annually in 1981.

a. Findings:

(1) Manning levels for dentists are good. This indicates that there is no need for compensation above the current levels.

(2) Earnings levels for military dentists lag behind those of their civilian counterparts for the greater part of their military careers.

b. Recommendations: Retain the Special and Continuation Pay for Dentists in their present forms.

c. Legislative Implications: None.

d. Minority Position: None.

4. Diving Duty Pay. The purpose of this pay is to increase the ability of the Uniformed Services to attract and retain sufficient volunteers to perform the arduous and hazardous duties involved with diving. Diving Duty Pay has been authorized in one form or another since 1886. Most recently, in July 1982, the rates of Diving Pay were increased to a maximum of \$300 per month for enlisted personnel and \$200 per month for officers. This was the first adjustment in the rates since 1962 and constituted a fairly significant change from the old maximum rate of \$110 per month. Because of this recent change, definitive conclusions pertaining to the effectiveness of the new rates could not be made.

a. Findings:

(1) There is a need for Diving Duty Pay now and in the future.

(a) Undermanning currently exists in the diving programs of the Navy, Marine Corps, and Air Force.

(b) Inability to attract sufficient personnel to diving is considered to be a major reason for current manning shortfalls.

(c) The most serious current undermanning is in the Navy, specifically in the Explosive Ordnance Disposal (EOD) and Fleet diving programs.

(d) Manning shortfalls in the Fleet diving program are at all levels of diving skill. A need exists within the Fleet diving program to provide incentives for skill advancement within the program.

(e) Navy requirements for divers are projected to increase in the foreseeable future. This will compound current shortages in the Fleet and EOD communities, and may create new shortages in the SEAL Program.

(2) The effectiveness of recent increases in Diving Duty Pay in meeting the need for Service divers is not yet fully evident. This precludes specific findings concerning the appropriateness of the current rates at the present time.

(a) The full effects of current rates on diver attraction and retention should be evident two years after implementation. A determination of the effectiveness of current Diving Duty Pay rates should be made at that time (July 1984).

(b) Many divers are not being compensated for all the hazardous duties they perform under orders because Diving Pay legislation restricts them to receiving only one Hazardous Duty Incentive Pay. Authorizing payment of all Hazardous Duty Incentive Pays to which a member is entitled would increase the attractiveness of both the SEAL and EOD programs and could improve manning.

b. Recommendations:

(1) A joint Service review to determine the effectiveness of Diving Duty Pay rates should be conducted after July, 1984.

(2) Entitle personnel receiving Diving Pay to receive not more than two additional payments under 37 USC 301, Incentive Pay: Hazardous Duty.

c. Legislative Implications: Amend 37 U.S.C. 304(c) to entitle divers to receive not more than two additional payments under 37 U.S.C. 301.

d. Minority Position: The Navy concurs in principle; however, they believe that an additional increase in the pay rate may be necessary in the future to provide an increased incentive for saturation divers.

5. Engineering/Scientific Career Continuation Pay (ESCCP). ESCCP is authorized to provide an additional incentive for officers with certain engineering and scientific skills to continue serving in the military in those skills, after completion of initial obligated service. The Air Force is the only service using this authority and has been doing so since September 1982. The pay is in the form of a bonus with associated obligated service. It is unique in that eligibility criteria is based on academic background first, with duty specialty a secondary criterion.

a. Findings:

(1) Notwithstanding some difficulties associated with the application of the continuation bonus, it should be left in its present form to determine improvements achieved over time. In view of its recent implementation, there is currently no real basis for change.

(2) There is a disparity between military and civilian

starting pay; however, the effects of the increased ROTC scholarships and the continuation bonus should be examined before considering any major modifications such as an accession bonus.

(3) Title 37 U.S.C. authorizes this pay for the "armed forces." Public Health Service and the National Oceanic and Atmospheric Administration are "Uniformed Services" not authorized to use this bonus. Although there is no immediate critical need in these Services, they should not be precluded from the authority to implement this incentive in the future if the need should arise. The statute should apply to all Uniformed Services.

b. Recommendations:

(1) Retain Engineering and Scientific Career Continuation Pay in its present form.

(2) Amend Title 37 U.S.C. 315 to read "Uniformed Services" vice "armed forces".

c. Legislative Implications: Amend 37 U.S.C. 315 to authorize the pay for all "Uniformed Services" vice "armed forces".

d. Minority Position: None.

6. Enlistment Bonus. The purpose of the Enlistment Bonus (EB) is to increase the number of initial enlistments in the military specialties experiencing critical personnel quantity or quality shortages. Monetary incentives, in addition to regular pay, date back to 1776. The current EB program had its beginning in 1971, when a bonus was offered to certain persons who enlisted in a combat element of an armed force for at least three years. Expanded in 1974 to include any skill designated as critical, the bonus currently pays up to \$5,000 for enlistment in the Army, Navy, Marine Corps or Air Force in skills that suffer from quality or quantity shortfalls. Each service establishes its own maximum bonus within this limit. In addition, the Army is conducting a test of an expanded bonus program which authorizes bonus payments of up to \$8,000. Current bonus legislation expires September 30, 1984.

a. Findings:

(1) Enlistment Bonuses are an appropriate managerial tool for channeling quality individuals into critically undermanned skills.

(2) Use of the Enlistment Bonus is improving the mix of high quality recruits for the Army, Marine Corps and Air Force. These Services either currently restrict recipients to AFQT Categories I-III A and High School Diploma Graduates or have plans to do so in the immediate future.

(3) Enlistment Bonuses should not be extended to Armed Forces Qualification Test (AFQT) Categories IIIB or IV except when it would be disadvantageous or uneconomical to limit a particular skill to higher

categories, or necessary to meet accession goals in a particular skill, or under adverse recruiting conditions.

(4) The criteria by which the Services add, change or delete bonus skills are meeting their needs and are appropriate to maintaining a flexible and responsive program.

(5) Enlistment Bonuses are cost-effective, as they may reduce accessions and their associated training costs.

(6) Current Enlistment Bonus payment limits are appropriate and provide the necessary flexibility to adjust payment based on Service needs.

b. Recommendations: Retain Enlistment Bonuses as a management tool to obtain quality personnel in critically undermanned skills.

c. Legislative Implications: None.

d. Minority Position: None.

7. Nuclear Officer Pays. There are approximately 135 commissioned nuclear reactor powered ships in the U.S. Navy of which 13 are surface ships and the remainder are submarines. Approximately 3,650 Navy officers are nuclear-trained. Because of the skills and training, with associated civilian marketability, required for these officers it traditionally has been difficult to recruit and retain them at desired rates. These special pays are intended to reduce these particular difficulties. The policies and administration of this set of special pays is clearly delineated from that of other special pays, such as Sea Pay and or Submarine Pay, that may also be applicable to these officers through the course of a normal career.

a. Findings:

(1) General. Present special compensation available to nuclear officers is sufficient to maintain retention above 40% in the short-term. Current retention is expected to be at least 42%. To sustain this FY83 high retention rate on a long-term basis would require an estimated \$3,300 increase in annual pay for junior officers. The Navy has documented a need to maximize retention of experienced officers in forthcoming retention year groups because of accessions shortfalls for these groups. The ability to achieve retention rates near or above 50% among these groups at a realistic cost is doubtful.

(2) Annual Incentive Bonus. The Annual Incentive Bonus may have been an important factor in causing an improvement in the number of people retained for 3 years in the 11-17 year group (from 80% to 85%). However, the 3 year retention for the group with less than 11 years has declined, suggesting that the AIB may be in competition with the Continuation Pay, thereby reducing its potential effectiveness in allowing the

Navy to secure satisfactory management control over attrition.

(3) Continuation Pay. Continuation Pay should be enhanced as soon as legislation can be passed to:

(a) allow 3-, 4-, and 5-year contracts at a maximum of \$7,000 per year of obligation, instead of the current restriction of 4-year contracts only;

(b) authorize and pay the bonus in one lump-sum when the agreement is made; and

(c) allow the Navy to offer a maximum of 4 Continuation Pay agreements per servicemember for obligated service not beyond 24 years of service. The pay should be structured in such a way that the servicemember accepts the offer within 1 year of eligibility or forfeits one of the remaining opportunities for Continuation Pay.

(4) Accession Bonus. The Accession Bonus and other policies, i.e., E-3 pay and nuclear scholarships, are working well at this time and should be retained in their present form.

(5) Nuclear Trained and Qualified Enlisted. Title 37 U.S.C. section 312a "Special Pay: Nuclear-trained and qualified enlisted members" should be repealed. Insofar as the Selective Reenlistment Bonus (SRB) authority of FY75 was equal in value and structure to the authority that expired under this section, the SRB has served well in its place.

b. Recommendations.

(1) The provisions authorizing the Annual Incentive Bonus should provide for its phase-out no later than the end of FY90, provided that the recommended enhancements to the Continuation Pay have been made and proven effective.

(2) Authorize contract lengths of 3 and 5 years in addition to the 4-year contracts currently authorized.

(3) Authorize up to 4 agreements for each officer payable for obligated service not beyond 24 years of service.

(4) Repeal the provision for a "Special Pay: Nuclear-trained and qualified enlisted members."

c. Legislative Implications:

(1) Amend 37 U.S.C. 312(a)(4) to authorize contracts of 3, 4 and 5 years, provided the period of new service does not extend beyond 24 years of service.

(2) Amend 37 U.S.C. 312(a) to provide for lump-sum payments only.

(3) Amend 37 U.S.C. 312(b) to authorize up to 4 agreements for each officer otherwise eligible and eliminate 312(a)(3), which restricts bonus eligibility based on years of commissioned service.

(4) Repeal 37 U.S.C. 312(a), "Special Pay: Nuclear trained and qualified enlisted members."

(5) Amend 37 U.S.C. 312(c) to extend the authority for Annual Incentive Bonus to 30 September 1990. However, future legislation to further extend this expiration date should not be enacted unless the enhanced Continuation Pay proposal has not been adopted, implemented or judged effective.

d. Minority Position: None.

8. Special Pays for Optometrists and Veterinarians. The purpose of these pays is to provide additional compensation for Optometry and Veterinary service personnel to increase the ability of the Uniformed Services to attract or retain officer volunteers in those skills. An outgrowth of the original special pay for Dentists and Physicians, these pays have remained at the \$100 per month rate since they were first began in 1953.

a. Findings:

(1) Manning levels for optometrists and veterinarians are in the good to excellent range. This indicates that there is no need for compensation above the current levels.

(2) Earning levels for military optometrists and veterinarians lag behind those of their civilian counterparts, for the greater part of their military careers.

(3) Any reduction in the Special Pays for Optometrists and Veterinarians would exacerbate the existing earnings gap.

(4) The Special Pays for Optometrists and Veterinarians should be maintained in their present forms.

b. Recommendation: Retain the Special Pays for Optometrists and Veterinarians in their present forms.

c. Legislative Implications: None.

d. Minority Position: None.

9. Overseas Duty Extension Pay (ODEP). This special pay, only recently established, provides an incentive for enlisted personnel in certain skill specialties to extend their tours of duty overseas. This pay actually encompasses three incentives only one of which is the

special pay provision of \$50 per month. Other incentive options include a thirty day "rest and recuperative" absence and a fifteen day "rest and recuperative" absence coupled with round-trip transportation, at government expense, between the overseas station and the nearest port in the U.S. The newness of the pay and the accompanying lack of data concerning overseas extension rates precluded definitive findings concerning the effectiveness of the pay in meeting its intended purposes.

a. Findings:

(1) ODEP serves an appropriate purpose, especially for those Services having substantial overseas requirements for certain skills.

(2) Collection and maintenance of extension and CONUS turn-around-time data for ODEP specialties by the Services will facilitate a future review of the effectiveness of ODEP after stabilization of Service programs.

(3) The recent implementation of this pay, coupled with a lack of prior data on overseas extensions, precludes specific findings concerning the current rates. Adjustment of the \$50 per month rate may be appropriate; however, increases in the rate should be subsequent to a determination of the effectiveness of the pay.

b. Recommendations:

(1) Retain overseas Duty Extension Pay (ODEP).

(2) Services using ODEP should collect and maintain extension and turn-around-time data to facilitate a later review of this pay's effectiveness.

c. Legislative Implications: None.

d. Minority Positions: None.

10. Medical Officer Pays. The purpose of "Special Pay: Medical Officers of the Armed Services" is to provide additional pay for officers of the Army or Navy Medical Corps or officers of the Air Force or Public Health Service who are designated as Medical Officers, thereby increasing the ability of the Uniform Services to attract and retain officer volunteers in the disciplines of Medicine or Osteopathy. It began in 1947 as \$100 per month and has increased to a possible maximum amount of \$29,000 annually, when all categories of payment are applied.

a. Findings:

(1) Manpower indicators for physicians have shown some improvement since the implementation of the Special Pay for Medical Officers of the Armed Forces.

(2) A determination as to the specific effect the special pay has had on the Medical Officer community can not be made because:

(a) insufficient time has elapsed since its implementation;

(b) the Services do not keep the data in a manner conducive to determining the full effectiveness of the pay; and

(c) many other factors could have impacted on the attraction and retention problem thus masking the effect of the pay.

(3) A comparison of civilian and military income for selected specialties shows that the military physician's income is significantly below that in the civilian sector.

(4) The Special Pay for Medical Officers should be maintained in its present form.

b. Recommendations:

(1) Retain the Special Pay for Medical Officers of the Armed Forces in its present form.

(2) The Services should maintain their data in such a manner that retention rates for physicians, after completion of service of obligations, can be computed.

c. Legislative Implications: None.

d. Minority Position: None.

11. Proficiency Pay. Proficiency Pay is designed to provide an attraction and retention management tool for shortage category enlisted specialties; to attract additional volunteers to unique duty assignments outside the member's normal skill-progression pattern; and to stimulate outstanding performance in any enlisted specialty, thereby improving the proficiency of the Armed Forces as a whole. Conceptionalized by the Cordiner Committee in 1957, Proficiency Pay has been in effect since 1958. For a time it was used as the major reenlistment incentive. Since the inception of the Selective Reenlistment Bonus (SRB) it has been used to provide a pay differential to persons in special duty assignments. It also has been used by the Navy as a means of providing a monetary reenlistment incentive in conjunction with SRBs.

a. Findings:

(1) Proficiency Pay should be discontinued in its present form based on the following:

(a) Proficiency Pay Grade Method: This method of payment

has never been used and it is unlikely that it ever will be.

(b) Proficiency Pay Rating Method:

Shortage Specialty Pay - The actual effect of this pay on reenlistments is not documented. The money spent on SSP could be better managed if it was moved to the SRB program where reenlistment shortfall problems are more properly addressed. However, certain QRMC proposed enhancements to the SRB program, such as removal of the dollar ceiling on bonus amounts and the addition of a 7th multiple, should be implemented as a first step to eliminate this pay. SSP recipients should continue to receive payments while assigned to their current billet.

Superior Performance Pay - This pay category is no longer employed by OSD. Only the Coast Guard continues to use it (32 people). It should be discontinued with consideration given to incorporating Coast Guard requirements into revised Special Duty Assignment Pay.

Special Duty Assignment Pay - This category should be retained and become a separate pay replacing Proficiency Pay in its entirety. The rates should be enhanced to the maximum level of \$275 per month.

(2) The OSD proposed Special Pay for Enlisted Recruiters should not be adopted since the creation of Special Duty Assignment Pay will fulfill the same purpose and continue to provide for other special duty assignments. The policy that limits payment of Special Duty Assignment Pay for recruiter supervisors should be changed to acknowledge the special circumstances of selection and assignment as a recruiter at headquarters.

(3) Career areas currently drawing SDAP should be carefully reviewed and, if they do not meet the established criteria and fulfill the purpose of this particular pay, they should be eliminated.

b. Recommendations:

(1) Discontinue Proficiency Pay in its present form, thereby eliminating:

(a) the Pay Grade Method;

(b) Shortage Specialty Pay (contingent on implementation of the 7th SRB multiple and elimination of the dollar ceilings on SRB amounts);

(c) Superior Performance Pay; and

(d) the present form of Special Duty Assignment Pay.

(2) In place of Proficiency Pay institute the new form of

Special Duty Assignment Pay, based upon the extreme difficulty of the job or the high degree of responsibility.

(3) Establish the maximum allowable amount of payment for this Special Duty Assignment Pay at \$275 per month.

(4) Special Duty Assignment Pay policy should be reconstructed to permit payments to recruiters at all levels of command at the same levels payable to field recruiters.

c. Legislative Implications: Amend 37 U.S.C 307 by rewriting major portions to replace Proficiency Pay with Special Duty Assignment Pay to include name change, eligibility requirement, saved pay, and new rates, conditional upon the removal of the ceilings on SRB bonuses and the addition of a 7th multiple.

d. Minority Position: None.

12. Career Sea Pay. Career Sea Pay provides special compensation to personnel serving on sea duty in recognition of the unusually arduous nature of such duty and as a means of improving retention of personnel in sea service skills. The most recent major change to this pay was effective 1 January 1981 when an entirely new structure of special pay for career sea duty was introduced. The new law retained the philosophy of pay for cumulative years of duty at sea with rates ranging up to \$310 per month. The pay applies to all enlisted personnel in pay grades E-4 and above, to all warrant officers and to those commissioned officers in pay grades O-1E and O-2E (prior enlisted) and O-3 through O-6. However, commissioned officers must have also accumulated at least 3 years of sea duty to be eligible to receive the pay.

a. Findings:

(1) Career Sea Pay is, with some eligibility exceptions, achieving its dual purpose of compensating for the hardships of sea duty and selectively improving retention of personnel.

(2) The incentive value of Career Sea Pay has eroded somewhat.

(3) Incremental rates beyond 12 years through 20 years of sea duty should be established with a new maximum of \$410 per month.

(4) Commissioned officers should be eligible for Career Sea Pay after accruing three years creditable sea service, regardless of pay grade.

b. Recommendations:

(1) The effectiveness and value of Career Sea Pay should be closely monitored and reexamined in about two years.

(2) Legislation should be submitted to establish incremental Career Sea Pay rates for up to 20 years of sea duty with a maximum rate of \$410 per month. This legislation should provide for payment of Career Sea Pay to commissioned officers in pay grades O-1 and O-2, provided they have accrued 3 years of sea duty.

c. Legislative Implications:

(1) Amend Title 37 U.S.C. 305a(b) to revise and expand rate table, to change rates for years 10, 11 and 12 for certain pay grades, and include rates for years beyond 12 years of accrued sea duty to 20 years of sea duty with a maximum rate of \$410 per month.

(2) Amend Title 37 U.S.C. 305a(b) to allow payment to all officers after they accrue 3 years sea duty.

d. Minority Position: The Department of the Navy concurred except as follows:

(1) A 24 percent increase in rates is required now to restore Career Sea Pay value to 1981 levels.

(2) A method of triggering legislative response to the deterioration of the incentive value of the pay is necessary. A maximum of \$500 per month is desirable.

13. Selective Reenlistment Bonus. The purpose of the Selective Reenlistment Bonus (SRB) is to serve as a retention incentive paid to enlisted members in certain selected military specialties to reenlist for additional obligated service. The bonus is intended to generate additional reenlistments in those critical military specialties characterized by retention rates insufficient to sustain the career force at adequate levels. Each skill is designated a "criticality factor" from zero to six to indicate the magnitude of the need to obtain added reenlistments above the numbers likely to reenlist in the absence of additional compensation. Bonuses are then computed by multiplying this factor times the individual's monthly basic pay and the number of years of additional obligated service incurred by reenlisting.

a. Findings:

(1) These bonuses should be paid in lump-sum instead of the current installment payment method to maximize the effectiveness of the incentive.

(2) The dollar ceiling should be removed from bonus amounts to prevent disincentives for longer reenlistments.

(3) The practice of allowing forgiveness of obligated service is not efficient and should be discontinued when all other enhancements, including the "7th multiple" proposed in Finding 6, are implemented.

The authority for this provision should be retained while the effect of other enhancements is evaluated, but should not be extended beyond 30 September 1987 unless it is clearly necessary to resume the practice in order to improve retention and if other measures are not practical.

(4) Zone A and Zone B bonuses continue to be effective management tools to induce additional reenlistments, although their marginal cost is currently high due to higher reenlistment rates and RMC. If the reenlistment behavior of the past several years continues, the Services should recognize that Zone C SRBs are marginally effective at best, and may be ineffective relative to other factors that influence reenlistment decisions beyond 10 years in the military. Bonuses should not be used in Zone C when conditions are like those in existence during the period examined in this study.

(5) Skills with high reenlistment rates are the most costly additions to the SRB program. Manning shortages alone should not determine SRB policy under such circumstances. Services should be particularly selective at this time in designating skills for reenlistment bonuses.

(6) Provided that Proficiency Pay or the practice of forgoing previously obligated service is discontinued, a "7th multiple" should be authorized in Zones A and B. This would provide adequate reenlistment incentive in skills that would otherwise pay maximum SRB and Proficiency Pay.

(7) The Uniformed Services should strongly consider an effort to develop a uniform framework to aid decisionmakers for all Services in assessing bonus effectiveness. As a minimum, the framework should focus on behavior differences by zone and Service. It should account for replacement cost by skill and length of service. Finally, it should use a consistent measure of bonus effectiveness throughout, such as bonus elasticity.

b. Recommendations:

(1) Continue SRB authority through 30 September 1987.

(2) Amend Title 37 U.S.C. to:

(a) Allow bonuses of up to 7 months of basic pay multiplied by the number of years, or monthly fraction thereof, of additional obligated service. (Allow the criticality factor to range up to 7.)

(b) Eliminate the provision restricting maximum bonus amounts to \$20,000.

(c) Provide for lump-sum payments only.

(3) Discontinue the practice which allows previously obligated service to be used in bonus computations when recommendation (2)

above is adopted. While the effect of other enhancements are being evaluated, the authority that permits the practice should be retained, but not but not beyond 30 September 1987 without clear justification.

c. Legislative Implications:

(1) Amend 37 U.S.C. 308(a)(1) to allow bonuses of up to 7 months of basic pay multiplied by the number of years, or monthly fraction thereof, of additional obligated service.

(2) Amend 37 U.S.C. 308(a)(1) to eliminate provisions restricting maximum bonus amounts to \$20,000.

(3) Amend 37 U.S.C. 308(b) to authorize only lump-sum bonus payments.

(4) Discontinue funding authority for 37 U.S.C. 308(e), which allows previously obligated service to be used in bonus computations subsequent to the enactment of Amendments (1) through (3) above and delete this provision not later than 30 September 1987.

d. Minority Position: Air Force views the authority to forgive previously obligated service as a necessary provision of the law to preclude inequitable treatment of enlisted members extending for the purpose of obtaining retainability for relocation or training.

14. Submarine Duty Incentive Pay. Until January of 1981 Submarine Duty Incentive Pay was categorized as a Hazardous Duty Incentive Pay. Pays in this category are intended to attract and retain sufficient volunteers to perform certain hazardous duties. In January 1981 the Military Pay and Allowances Benefits Act implemented an entirely different approach to special pay for submarine service. For the first time this special pay was not considered compensation or incentive for performance of hazardous duties. Instead, it was considered a career incentive without regard to potential or actual hazards of the duty. Since the pay could be received while not performing operational submarine duty, operational "gates" were established at 12 and 18 years of service. Submarine Duty incentive pay stops at these "gates" for members who have not spent a sufficient portion of their careers performing operational submarine duty.

a. Findings:

(1) The primary purpose of Submarine Duty Incentive Pay is to encourage members of the Navy, both officers and enlisted, to pursue a career in the submarine service. Additional incentive is necessary due to the adverse conditions associated with an operational submarine duty career. These conditions exceed the arduous nature of surface sea duty and, thus, it is appropriate to provide compensation over and above that provided by Sea Pay.

(2) Submarine Duty Incentive Pay has resulted in improved retention of officer and enlisted submarine resources. The most notable improvements that can be attributed to this pay have occurred among the more senior enlisted groups. The QRMCM recommendation for expanded implementation of Nuclear Officer Continuation Pay should help correct the problem of senior submarine officer shortages by increasing both the magnitude and duration of available special pay. QRMCM proposals to enhance the Selective Reenlistment Bonuses and the Nuclear Officer Incentive Pays should provide needed improvements in retention incentives for other personnel.

(3) Submarine Pay is paid to an individual before he reports for duty to his first operational submarine. This is uncharacteristic of other special pays (e.g., Aviation Career Incentive Pay and Hazardous Duty Incentive Pay) authorized while in training, in that, individuals are not exposed to the arduous aspects of submarine duty until after the completion of training which is frequently a year and a half in duration. This aspect of Submarine Duty Incentive Pay is designed to augment the other attraction incentives associated with a career in Submarine Service. The relative newness of Submarine Pay while in training coupled with the length of the training pipeline has resulted in little data to properly evaluate its effectiveness. It should be retained during the training period, but evaluated for effectiveness in about 2 years when its impact can properly be measured.

(4) The requirement that enlisted personnel incur sufficient obligation to allow assignment to submarine duty upon completion of shore duty is an effective personnel management tool. Implementation of the COPAY enhancements recommended by the QRMCM is expected to have a similar effect for officers while satisfying other needs as well.

b. Recommendations:

(1) Retain Submarine Duty Incentive Pay in its present form.

(2) In about 2 years, review the provision of Title 37 that permits payment of Submarine Duty Incentive Pay upon commencement of training leading to duty on an operational submarine. At that time there should be sufficient data for analyzing its effectiveness.

c. Legislative Implications: None.

d. Minority Position: None.

D. Other Pays. Pays in this category are neither clearly hazardous nor incentive, but provide compensation for or recognition of rigorous duty, unique responsibility, or other special circumstances.

1. Special Pay While on Duty at Certain Places. Certain Places Pay (CPP) was initially designed to act as an incentive or additional compensation for duty overseas. However, because the rates have

not changed in many years, the purpose of CPP has evolved to that of a token payment for rigorous foreign duty. The current form of CPP was established by the Career Compensation Act of 1949. It is paid only to enlisted personnel on an ascendant scale based upon paygrade. Although it initially all enlisted personnel serving outside the contiguous United States were entitled to CPP, it is now paid only to personnel stationed at arduous overseas locations.

a. Findings:

(1) Special Pay While on Duty at Certain Places is of little value in its present form.

(2) The eligibility criteria are too lenient, and the authorized locations are too extensive. The pay should be restricted to only those isolated or remote locations where dependents are not authorized and the environment presents more than normal discomforts with little or no opportunity for travel.

(3) The value of the pay has decreased since its inception in 1949 to the point that it is only a small, insignificant token.

(4) The pay is needed and should be retained, but it should be properly structured and implemented to provide a highly useful tool to assist the Services in manning selected world-wide locations.

(5) Both officer and enlisted personnel should draw the pay.

(6) The rates should be sufficient to reward those performing duty in remote areas as well as provide an incentive to assist the Services in manning isolated stations.

(7) The modified flat-rate method, described in the study, is appropriate because it provides the same level of pay to those experiencing similar hardships while providing an incentive by establishing a relationship to pay grade.

b. Recommendations:

(1) Restrict CPP to only those personnel (both officers and enlisted) assigned to isolated or remote locations where dependents are not authorized and the environment presents more than normal discomforts with little or no opportunity for travel. However, provision should be made for the Service Secretaries concerned to waive the dependent-restricted criteria on an individual case-by-case basis.

(2) Adopt an ascendant scale rate based on pay grade, with the amount ranging from \$25 for E-1 through E-3 to \$180 for O-6.

c. Legislative Implications:

(1) Amend 37 U.S.C. 305(a) to change rates ranging from \$25 to \$180 per month.

(2) Amend 37 U.S.C. 305(a) deleting prohibition against payment to personnel serving in the United States or its possessions.

(3) Amend 37 U.S.C. 305(b) deleting prohibition against paying to members who are residents of the state, possession, or foreign country in which they are serving.

(4) Amend 37 U.S.C. 305(a) to restrict payments to members in locations where dependents are not authorized. Provide a clause for Service Secretary approval of exceptions to dependent restricted criteria on a case-by-case basis.

(5) Amend 37 U.S.C. 305(a) deleting the word "enlisted" thereby extending entitlement to all members of a Uniformed Service.

(6) A "save pay" provision should be included for those individuals drawing CPP under the current system at the time of enactment of the amending legislation.

d. Minority Position:

(1) The Air Force prefers to maintain CCP in its present form.

(2) The Joint Chiefs of Staff (J-1) is concerned with loss of recognition of many overseas locations.

2. Family Separation Allowance (Type II). FSA II is the only allowance that was reviewed by the 5th ORMC. The purpose of FSA II is to reimburse, on an average basis, the miscellany of non-quantifiable added expenses that result from family separation. It was created in 1963 as \$30/month for all personnel, and has remained unchanged since that time.

a. Findings:

(1) FSA II fulfills a useful purpose in the Service compensation package and should be continued.

(2) FSA II should continue to reimburse, in part, those miscellaneous and non-quantifiable expenses created by family separation.

(3) An increase in the FSA II rate to \$60 per month is believed appropriate.

b. Recommendations:

(1) Retain FSA II in its current form.

(2) Raise the FSA II rate to \$60 monthly.

c. Legislative Implications: Amend 37 U.S.C. 427(b) to increase the allowance from \$30 per month to \$60 per month.

d. Minority Position: The Navy desires a \$96/month rate.

3. Hostile Fire Pay (HFP). Hostile Fire Pay is unique. It is not designed to compensate for the hazards of, or act as an incentive for, participation in armed conflict. The purpose of HFP is to provide an additional payment during periods of nominal peace, as a token of recognition, to personnel serving in a hostile fire area, and to personnel of a vessel, aircraft, or unit that engages in hostile action, outside of a designated hostile fire area. It originated with the inception of Combat Badge Pay and Expert Medical Badge Pay (\$10 per month) during WWII and evolved through the Combat Pay of the Korean Conflict (\$45 per month) to its present form (\$65 per month) as a direct outgrowth of the Vietnam Conflict.

a. Findings:

(1) Hostile Fire Pay should be retained, but modified to improve upon the current and previous systems.

(2) Alternative #1, described in detail in the study, should be adopted because:

(a) It fulfills the intent of Congress by providing a "token of recognition."

(b) It strengthens the eligibility criteria so that individuals regularly receiving it must be directly engaged with the enemy on a continuing basis.

(c) It provides for a closer working relationship with the Department of State in the administration of the pay.

(d) It is easier to administer than other alternatives because it keeps the pay simple and straightforward.

(e) It is reasonable in terms of total cost, provided the eligibility criteria are strictly enforced.

(f) The amount of payment maintains a constant relationship with the Hazardous Duty Incentive Pays.

(3) A name change to better describe the pay is appropriate, preferably "Danger Pay." This name is compatible with that used by the Department of State and, therefore, provides for consistency within government agencies and recognizes the political acceptability that the Department of State pay has enjoyed over the years.

(4) A comprehensive DoD directive should be developed to provide general guidance and procedures for:

(a) responsibilities at all levels of the command structure;

(b) area designation by the Secretary of Defense, either independently or in association with the Department of State; and

(c) certification when an individual is subjected to a hostile act outside a designated danger area.

b. Recommendations: (On July 21, 1983, in an action independent of and subsequent to the completion of this study, the House passed an amendment to 37 U.S.C. that, among other things, changed the name of this pay to "Special Pay: duty subject to hostile fire or imminent danger." While the amendment bore some relationship to selected recommendations herein, it did not abrogate the study.)

(1) Retain Hostile Fire Pay.

(2) Adopt the eligibility criteria contained in Alternative #1 of the study.

(3) Change the name to Danger Pay.

(4) Set the rate of payment equal to the lowest Hazardous Duty Incentive Pay at the time.

(5) Develop a comprehensive DoD directive which includes but is not limited to the issues presented in paragraph a.(4) above.

c. Legislative Implications:

(1) Amend 37 U.S.C. 310(a) to include tightened eligibility criteria and increase payment to lowest Hazardous Duty Incentive Pay.

(2) Amend 37 U.S.C. 310 to change name to "duty subject to danger".

d. Minority Position: None.

4. Intelligence and Investigative Pay (Proposed). The purpose of this proposed Hazardous Duty Incentive Pay (HDIP) would be to provide an incentive to uniformed personnel for the performance of hazardous duty required by orders filling intelligence and investigative positions. The QPMC review of this proposed pay was requested by the Air Force which believes such a pay would promote increased retention and enhanced experience levels within the ranks of Air Force Office of Special Investigations (AFOSI).

a. Findings:

(1) Duties in intelligence and investigative field may present potential hazards greater than those experienced by some servicemembers. However, sufficient evidence is not currently available to indicate a hazard level warranting a Hazardous Duty Incentive Pay for all agents.

(2) Aggregate current manning and that in the recent past, within the AFOSI career fields is generally satisfactory. Attraction and retention are comparable with overall Air Force norms.

(3) Officer compensation is comparable to that offered for similar work in the civilian sector of the economy.

(4) Enlisted agent compensation is significantly lower than compensation received by civilian criminal investigators; this may create some draw to the outside market. However, competition for these positions is considerable, particularly for the more prestigious and higher paid agencies.

(5) Authorizing HDIP for the entire career field is not considered an appropriate method of increasing compensation for the enlisted force. Greater financial incentives can be offered and more effectively targeted through use of the SRB should significant manning problems develop.

b. Recommendation: A new HDIP for intelligence and investigative duty should not be adopted.

c. Legislative Implications: None.

d. Minority Position: The Air Force believes a special HDIP is justified for enlisted AFOSI agents.

5. Special Pay for Officers Holding Positions of Unusual Responsibility and of a Critical Nature (Responsibility Pay). Responsibility Pay provides an additional payment for officers in special assignments carrying responsibilities over and above those of other officers of the same grade. The pay is simply recognition for the heavy, direct personal responsibility required of personnel in selected duties. First authorized in 1958, Responsibility Pay was intended as the officer counterpart to enlisted Proficiency Pay. Except for limited use during the late 1960's and early 1970's for Army and Navy advisors in Vietnam, the pay has been used only for commanders-at-sea in the Coast Guard (since 1973) and the Navy (since 1979).

a. Findings:

(1) Special pay for positions of unusual responsibility, and of a critical nature, is appropriate and has been effective in providing proper recognition. It should, therefore, be retained.

(2) The provision allowing the Secretaries concerned to designate which positions are truly of a highly responsible and critical nature is appropriate.

(3) Eligibility should be expanded to include grades O-1, O-2, and W-1 through W-4. Payment should be limited to 5% of the personnel in each of these pay grades. Similar recognition of enlisted personnel should be achieved through the judicious use of the proposed Special Duty Assignment Pay (replaces Proficiency Pay).

(4) Responsibility Pay rates should receive a fair and reasonable adjustment.

b. Recommendations:

(1) Retain special pay for positions of unusual responsibility and of a critical nature.

(2) Set Responsibility Pay rates as follows: O-1, O-2 and W-1 through W-4 at \$50 per month; O-3 and O-4 at \$75 per month, O-5 at \$150 per month and O-6 at \$200 per month.

(3) Limit payment to 5% of the personnel in pay grades O-1, O-2, W-1, W-2, W-3 or W-4. Limits established for other pay grades should remain unchanged.

c. Legislative Implications:

(1) Amend 37 U.S.C. 306(a) to include active duty officers in pay grade W-1 through W-4 and O-1/O-2 at \$50 per month and to increase the rate for O-3/O-4 to \$75, O-5 to \$150, and O-6 to \$200.

(2) Amend 37 U.S.C. 306(c) to include not more than 5% active duty officers in pay grades W-1, W-2, W-3, W-4, O-1 or O-2.

d. Minority Position: None.

E. Related Issues.

1. Multiple S&I Pays. In the past, Congressional or Presidential Executive Orders have placed limitations on multiple S&I payments. Additionally, when addressing problems of the military compensation system, frequently the focus is given on receipt of multiple pays. The issue is further complicated by an apparent misunderstanding regarding the difference between a pay and an allowance. The purpose of this study was to determine the extent to which the Services rely on the multiple use of the S&I category of pays within individual occupational skills, and whether these payments are necessary and appropriate to acquire and maintain these skills at stated force management levels.

a. Findings:

(1) The practice of using varying combinations of S&I pays is an efficient, cost-effective means of addressing manpower problems, particularly since the character and severity of the problems tend to differ across Service and generalized occupational lines.

(2) No Service utilizes multiple S&I pay authority to excess.

(3) Over 80% of all multiple S&I pay recipients are enlisted members; an overwhelming proportion of whom are in pay grades E-3 through E-6.

b. Recommendation: The Services should periodically review their use of multiple S&I payments to ensure that they continue to use them only in cases where this practice is necessary for the achievement of force management objectives.

c. Legislative Implications: None.

d. Minority Position: None.

2. Wartime Application of S&I Pays. Statutes providing authority for several S&I pays allow for their suspension during wartime or periods of national emergency. These provisions, however, are not consistently applied to all S&I pays. Some may be suspended at the discretion of the President or the Secretary concerned, a few are automatically terminated upon declaration of war, and still others are not addressed at all.

a. Finding: In initial periods of war or national emergency, operators and planners should not be expected to turn their attention to making determinations about the payment/non-payment of the various S&I pays.

b. Recommendation: A Joint Service Group headed by an OASD representative should be formed to develop a plan capable of being implemented within a short period of time that clearly states the required actions for each S&I pay.

c. Legislative Implications: None at this time; however, the recommended plan will likely result in amendments to 37 U.S.C. Chapter 5 when developed.

3. Quality. The ORMC review and evaluation of Special and Incentive pays was not without regard to quality considerations. For the most part the S&I pays were assessed in terms of their capability to attract and retain the required quantity and desired quality of personnel. The purpose of this review was determine what impact S&I pays have or should have on quality force considerations.

a. Findings:

(1) There are many indicators which can be used to assess the capabilities, abilities and skills, or "quality," of military personnel to perform their missions. Comparative analyses, across Services and over time are difficult, since "quality" is a function of accession and reenlistment policies, training, experience and performance as developed by the individual Services and reinforced by promotion systems.

(2) Currently, most S&I pays bear only indirect relationships to the issue of quality. The Services control their own "quality destiny" through various force management devices. These include Service-specific entry standards, promotion system, and policies governing reenlistments and discharges. The S&I pays are viewed as management tools -- used to "fine tune" the system, after other management techniques have been employed. However, a robust S&I pay policy, one which is tied -- whenever possible -- to well-defined quality standards may assist in maintaining and improving the quality profile desired.

(3) The quality of accessions, as measured by educational attainment and AFOT, has shown significant improvement since the low point of 1979.

(4) Given the increased number of 1976-1980 accessions scoring in AFOT Category IV, there is a potential "bow wave" of these personnel should they exhibit higher retention rates than desired by the Services.

(6) There is a need to maintain adequate compensation, and to ensure that the Services have flexibility in both Special and Incentive Pays and in manpower policies to address potentially adverse shifts in the quality of personnel.

(5) Across various measures examined in this review, there is a suggestion that a decrease in the quality of the career force can be expected if the Services ignore that Category IV problem in their reenlistment policies; an oversight which they are not likely to let happen, but a problem which should be closely monitored.

(7) An in-depth study which would determine what impact Special and Incentive pays have or should have on quality force considerations is required. While on-going studies of accession and attrition may bear on this issue, special attention should be paid to retaining quality personnel, via S&I pays, currently in the force.

b. Recommendation: The Department of Defense should pursue an in-depth study of the existing and potential relationships between Special and Incentive pays and the attraction and retention of quality personnel.

c. Legislative Implications: None

4. Officer/Enlisted Differential for Certain Hazardous Duty Incentive Pays. During the process of reviewing the various hazardous duty incentive pays, it became increasingly clear that, although there is

some incentive associated with certain pays, the primary purpose is for the hazards or risks involved. It was, therefore, believed that officer/enlisted personnel should receive the same level of payment for seven of the Hazardous Duty Incentive Pays -- Parachute, Demolition, Experimental Stress, Toxic Fuels, Toxic Pesticides, Flight Deck, and Flight-Non-crewmember. (The reasons why these particular HDIPs were so identified are addressed in their respective studies.) Based on the concerns (pro and con) of the Services regarding elimination of the differential that currently exists, this issue was briefed to, and discussed with, the 5th QRMC Steering Group.

a. Findings: The officer/enlisted pay differential should be eliminated for Parachute Pay, Demolition Duty Pay, Experimental Stress Duty Pay, Toxic Fuels and Propellants Pay, Toxic Pesticides and Dangerous Organisms Pay, Flight Deck Duty Pay, and Non-crewmember Flight Pay.

b. Recommendation: Eliminate the officer/enlisted differential for the seven Hazardous Duty Incentive Pays cited in the Findings.

c. Legislative Implications: Addressed in the individual studies.

d. Minority Positions: The Air Force preferred to retain the differential, believing that an HDIP differential is warranted based on mission-related activities and responsibilities and that it is not predicated on an assumption or quantification or risk. The Navy believes that for duties requiring the assignment of volunteers exclusively, rates should be scaled by grade. For duties in which the assignment of non-volunteers is acceptable, elimination of the differential is appropriate.

E. ESTIMATED COSTS OF QRMC RECOMMENDATIONS. Estimated costs for FY85, based upon assumed Congressional enactment of QRMC recommendations for S&I pays, appear in the tables below. Estimates are as of 1 December 1983.

Category I - Costs reflected in this table are additive to current projected budget levels for these pays and are very tentative depending on changing manpower requirements, "save pay" provisions, and conditional situations associated with several recommendations.

Category I - Estimated Additive Costs

<u>Pay</u>	<u>\$ in millions</u>
Aviation Officer Continuation Pay	21.30
Demolition Duty Pay	1.10
Experimental Stress Duty Pay	.20
Flight Pay (Crew/Non-Crew)	13.90
Flight Deck Duty Pay	4.60
Parachute Duty Pay	9.20
Toxic Fuels & Propellants Pay	.70
Toxic Pesticides & Dangerous Organisms Pay	.02
Diving Duty Pay	2.20
Nuclear Officer Pay (portion shifting from Annual to COPAY)	2.20
Proficiency Pay (new Special Duty Assignment Pay)	25.00
Career Sea Pay	1.70
Family Separation Allowance (Type II)	42.60
Hostile Fire pay (renamed Danger Pay)	.10
Responsibility Pay	.50
TOTAL	125.32

Category II - Budget changes reflected in the following table are necessary to accommodate a shift in the method of payment for certain pay categories but do not represent increases in the benefit level caused by rates or structural changes to these pays. Payment by lump-sum instead of installment payments results in a temporary budget increase due to the obligation incurred in the past but not reflected in the budget for the year in which the obligation was made. As these obligations are reduced, the budget will return to levels lower than projected FY85 levels because of the increased effectiveness of lump-sum bonuses on retention. Exact savings cannot be estimated.

Category II - Estimated Budgetary Impact Due to Shift in Method of Payment

<u>Pay</u>	<u>\$ in millions</u>
Selective Reenlistment Bonus	\$300.7
Nuclear Officer Pays	69.2
TOTAL	\$369.9

II. OVERVIEW OF SPECIAL AND INCENTIVE PAYS STUDY

A. PURPOSE: To conduct analysis of specific Special and Incentive (S&I) pays to determine if they are fulfilling the needs for which they were designed, based on force management considerations and cost effectiveness.

B. ASSUMPTION: The Uniformed Services will continue to require certain Special and Incentive Pays in order to provide the necessary acquisition and retention levels to sustain the force.

C. SCOPE: All Special and Incentive pays contained in Title 37, U.S.C. Chapter 5 were reviewed, except those specifically designated for the Reserves. A proposed pay for investigators submitted by the Air Force was also evaluated. Although not in the category of special pays, Family Separation Allowance (Type II), was included as a study item based on a commitment made by OASD (MRA&L) (MP&FM) in 1981 that it be referred to the next QPMC. A complete list of all pays studied is located on the following page.

D. DATA SOURCES: The primary sources of data were the Service Staffs and the Defense Manpower Data Center (DMDC). Numerous other public and private agencies were extremely helpful and provided data that was valuable to the overall analytical efforts. These agencies are listed in the individual issue papers found in Section IV.

E. FIELD INTERVIEWS: Although not a primary data source, field interviews were conducted at a number of locations throughout the country to obtain first hand impressions from individuals either drawing or, involved with the utilization of Special and Incentive Pays in various occupational skills. A complete list of field trips is located in Section VI.

F. STEERING GROUP: A Steering Group was formed for the purpose of providing high level guidance and review. Its membership comprised of the Assistant Secretary of Defense (MRA&L), the Deputy Assistant Secretary of Defense (MRA&L) (MP&FM), the Department Assistant Secretaries, the senior manpower and personnel representatives of all the Uniformed Services and the J-1 of the Joint Chiefs of Staff. More detailed information pertaining to Steering Group activities may be found in Volume IV.

G. RELATED ISSUES: During the course of the S&I analyses, it became evident that several issues required attention apart from the individual analyses for each pay. These included: Multiple Pay which concerns the simultaneous receipt of two or more Special or Incentive Pays related to the same occupational skill; Wartime Considerations an issue pertaining to the authorization of Special and Incentive pays upon declaration of war; the role of Special and Incentive pays on quality with respect to the acquisition and retention of personnel to meet force management requirements; and the officer/enlisted payment differential associated with certain Hazardous Duty Incentive Pays. These issues are addressed in detail in Section V.

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H. GENERAL OBSERVATION: Although limited by data in some areas, this review constitutes the most complete and most comprehensive treatment of Special and Incentive pays ever undertaken. It should, therefore, serve as a benchmark for subsequent S&I studies and/or legislative proposals. The multitude of data, both hard copy and on magnetic tape, is invaluable and should be of great benefit to future QRMC efforts.

SPECIAL AND INCENTIVE PAYS
(Title 37 U.S.C.)*

Sec.	
301.	Incentive pay: hazardous duty. (10 pays presented individually)
301a.	Incentive pay: aviation career.
301b.	Special pay: aviation career officers extending period of active duty.
301c.	Incentive pay: submarine duty.
302.	Special pay: medical officers of the armed forces.
302a.	Special pay: optometrists.
302b.	Special pay: dentists.
303.	Special pay: veterinarians.
304.	Special pay: diving duty.
305.	Special pay: while on duty at certain places.
305a.	Special pay: career sea pay.
306.	Special pay: officers holding positions of unusual responsibility and of critical nature.
307.	Special pay: proficiency pay for enlisted member.
308.	Special pay: reenlistment bonus.
308a.	Special pay: enlistment bonus.
308f.	Special pay: bonus for enlistment in the Army.
310.	Special pay: duty subject to hostile fire.
311.	Special pay: continuation pay for dentists in the armed forces.
312.	Special pay: nuclear-qualified officers extending period of active service.
312a.	Special pay: nuclear-trained and qualified enlisted members.
312b.	Special pay: nuclear career accession bonus.
312c.	Special pay: nuclear career annual incentive bonus.
314.	Special pay: qualified enlisted members extending duty at designated locations overseas.
315.	Special pay: engineering and scientific career continuation pay.
427.	Family separation allowance (Type II only)
	(Proposed) Hazardous duty incentive pay: intelligence and investigative duty

* For simplicity and ease of reference, abbreviated names of the S&I pays will be used throughout this volume.

NOTE: Unless otherwise indicated in the text describing the tables or noted on the tables themselves, the information contained therein are QRMC tabulations of Service-provided data.

III. STUDY METHODOLOGY AND FLOW PLAN

A. STUDY METHODOLOGY: A basic uniform analytical approach was used in the review of the various Special and Incentive Pays. Each pay was examined from two perspectives. First, it was studied to determine if the pay is necessary for the Services to attract and retain personnel in sufficient numbers to meet their needs or in some cases, provide the proper recognition for certain duties. Second, the rates of each pay were evaluated to ascertain if they are properly structured and set at the levels necessary to effect the desired behavior or provide the appropriate recognition.

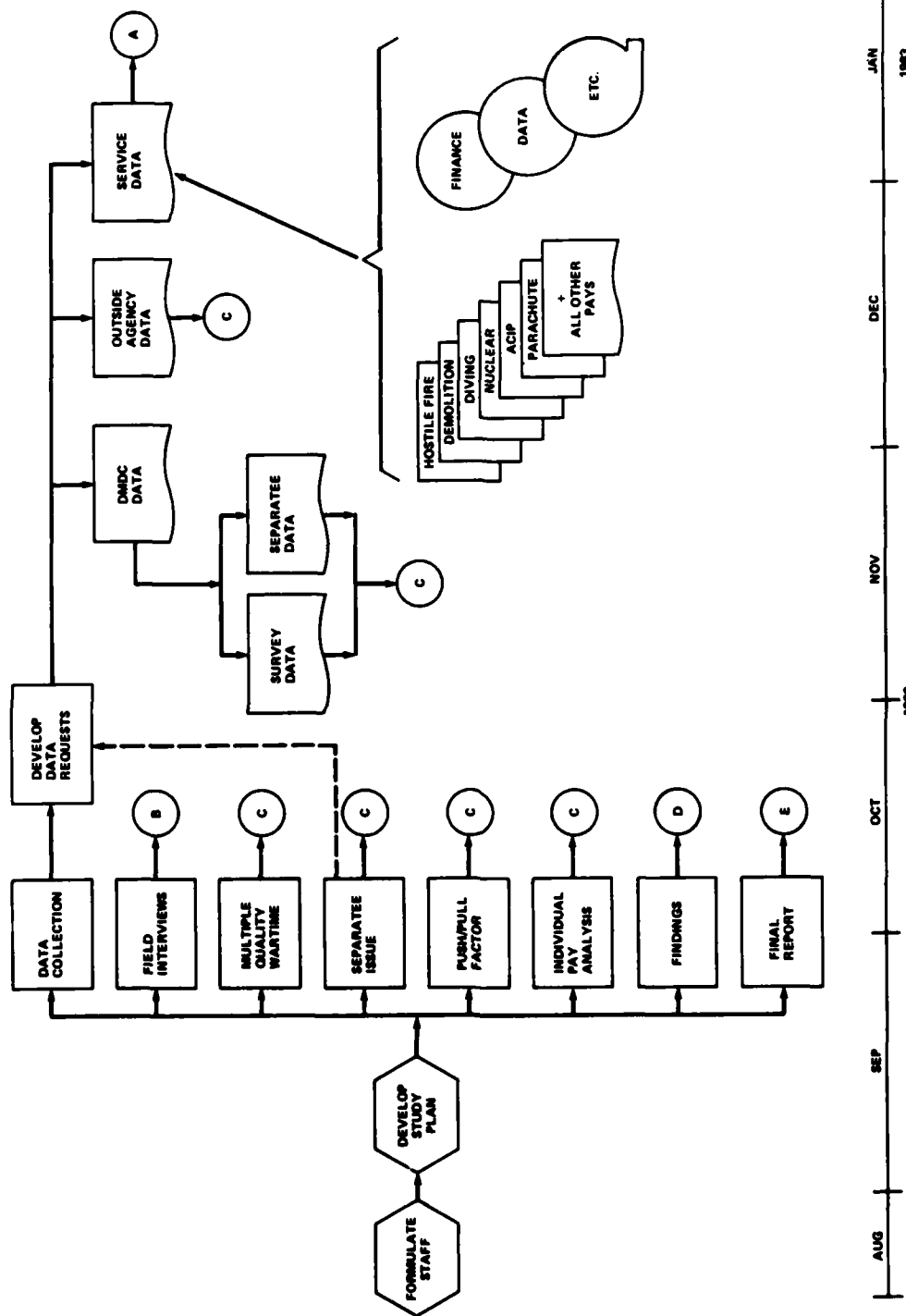
B. STUDY FLOW PLAN: A study flow plan was developed to indicate the general flow of the project leading from the conceptual and planning stages through data gathering and compilation, to analysis, findings, and recommendations. The complete review of the Special and Incentive (S&I) pays commenced with the development of a basic study plan (depicted in the chart on the following page). The flow began with extensive data collection from various sources both within and outside the Uniformed Services. Comprehensive, detailed data requests were developed and forwarded to the Service Staffs, the Defense Manpower Data Center (DMDC) and numerous other agencies to provide information in either hard copy or magnetic tape form. During the early stages of the study, several related issues were identified for attention in association with the individual pay analyses, i.e., multiple pays, wartime considerations, etc. These are discussed separately in this report.

It was also decided that field interviews should be undertaken to gain further insight into perceptions in the field and their relationships to the data provided by the Services. Accordingly, numerous field trips were conducted, primarily during the data collection period, but before the bulk of the analysis was conducted.

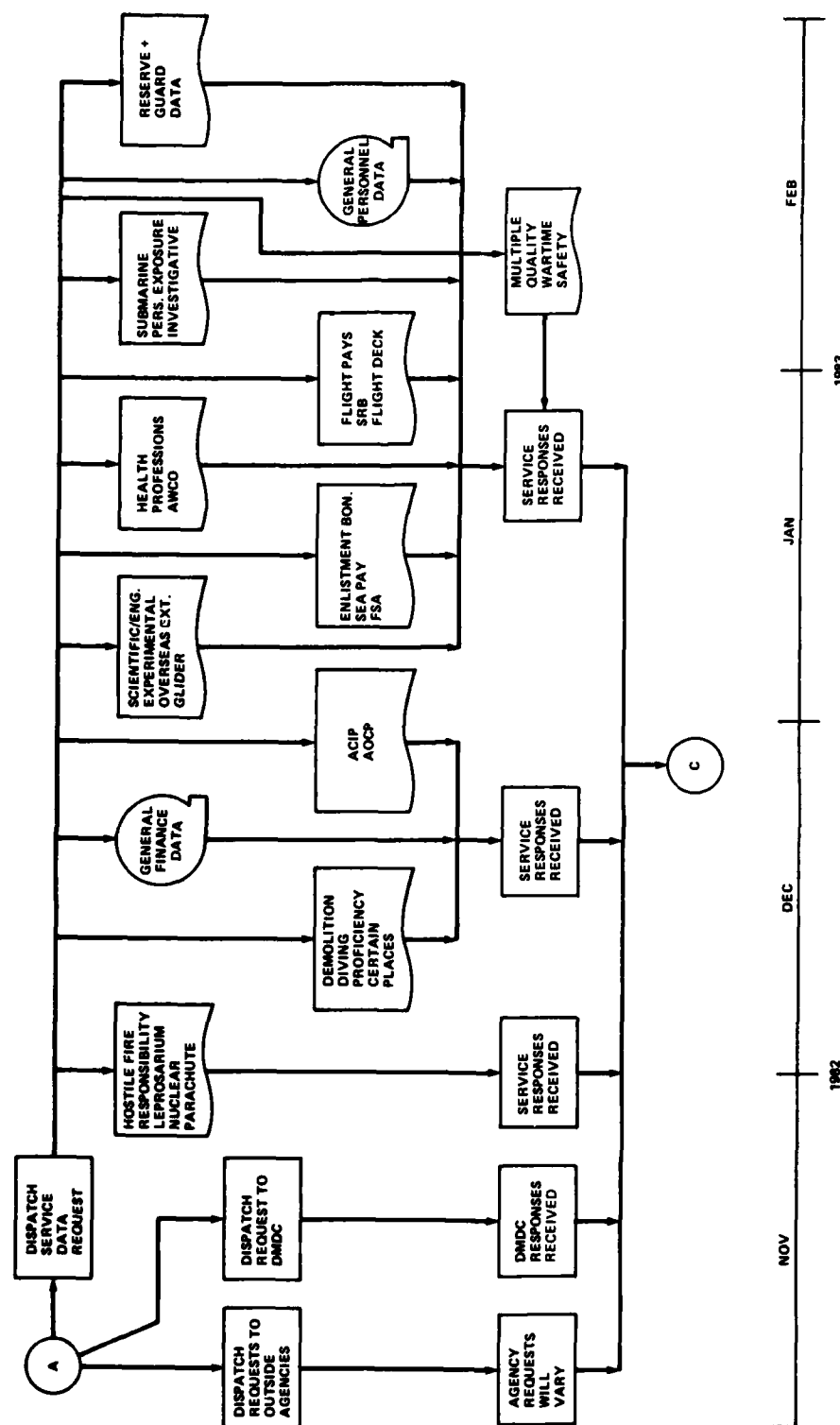
The major portion of the analytic phase was dedicated to the individual analysis of each pay and development of issue papers. Although some advanced work was completed on the identified related issues, most of the detailed analysis in these issue areas came later. During the analysis phase, the issue papers were submitted to a thorough review process: a Preliminary Draft was forwarded to the Services' Deputy Chiefs of Staff for Manpower and Personnel for comments, a second draft, For Coordination, was sent to the Department Assistant Secretary level, and a Final Draft reviewed by OASD before presentation to the QRM Steering Group for final comments.

Once the review process was complete, the individual issue papers were prepared in final form for publication in the S&I volume.

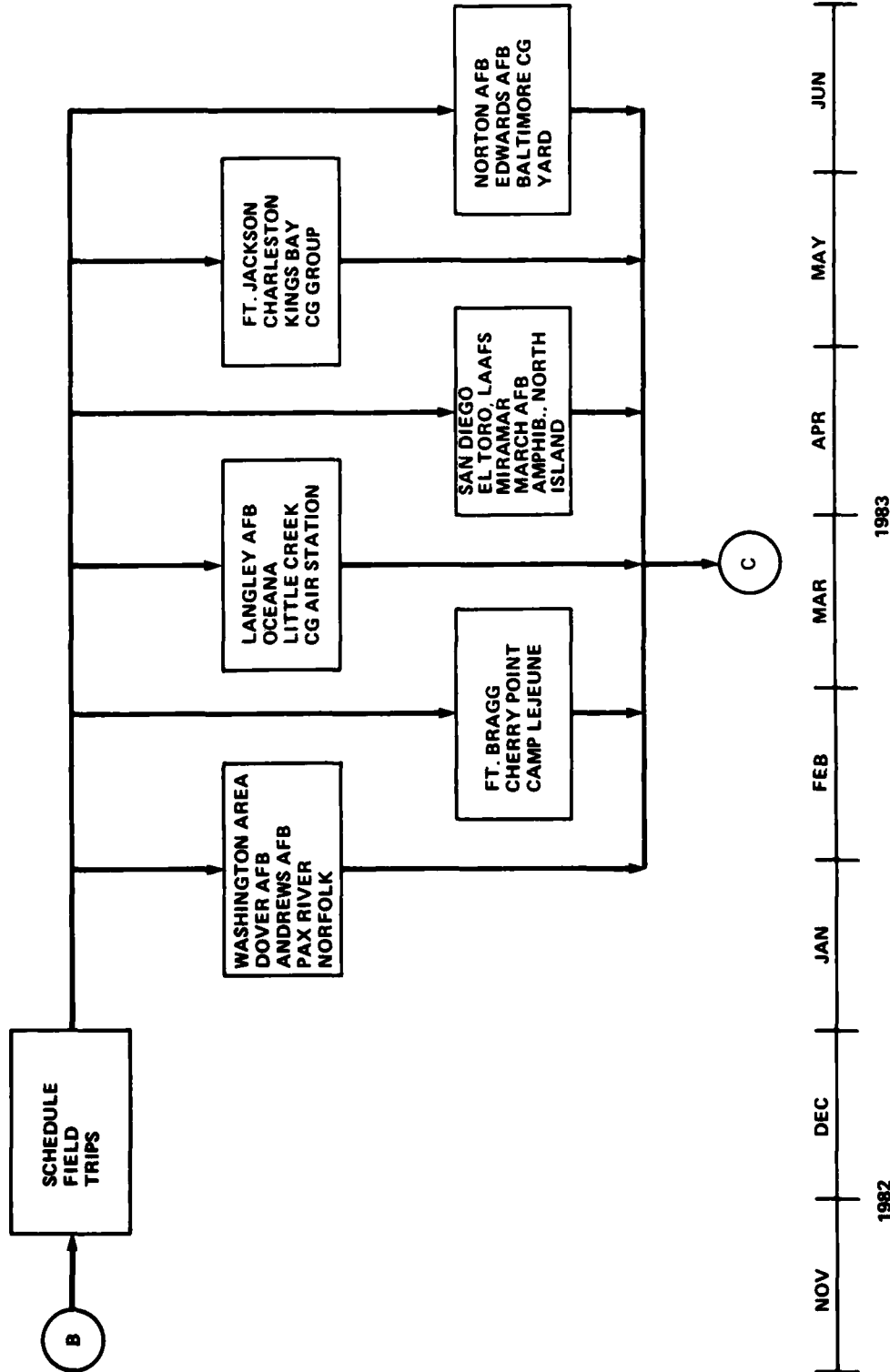
SPECIAL AND INCENTIVE PAYS FLOW PLAN



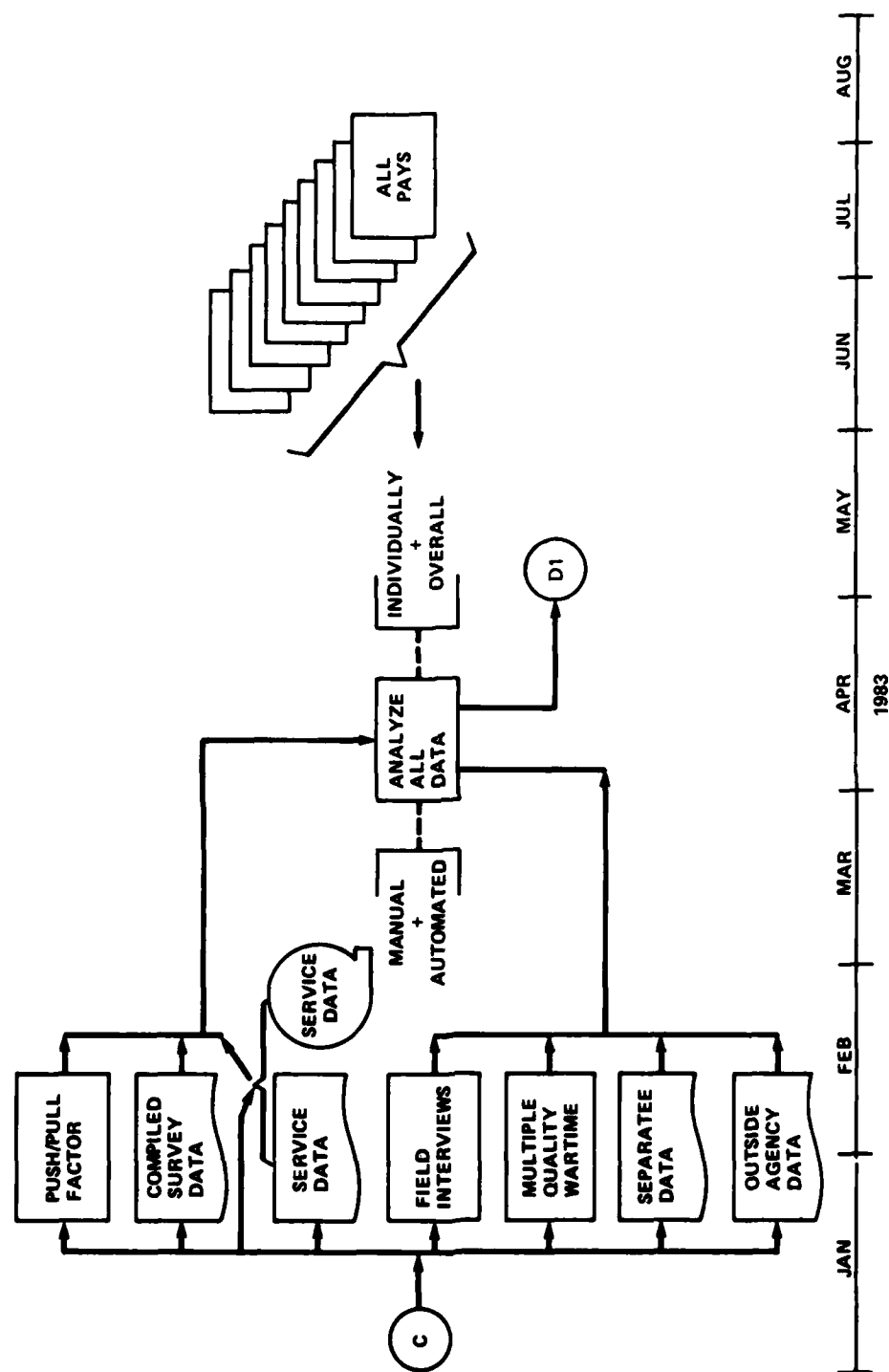
DATA COLLECTION PHASE



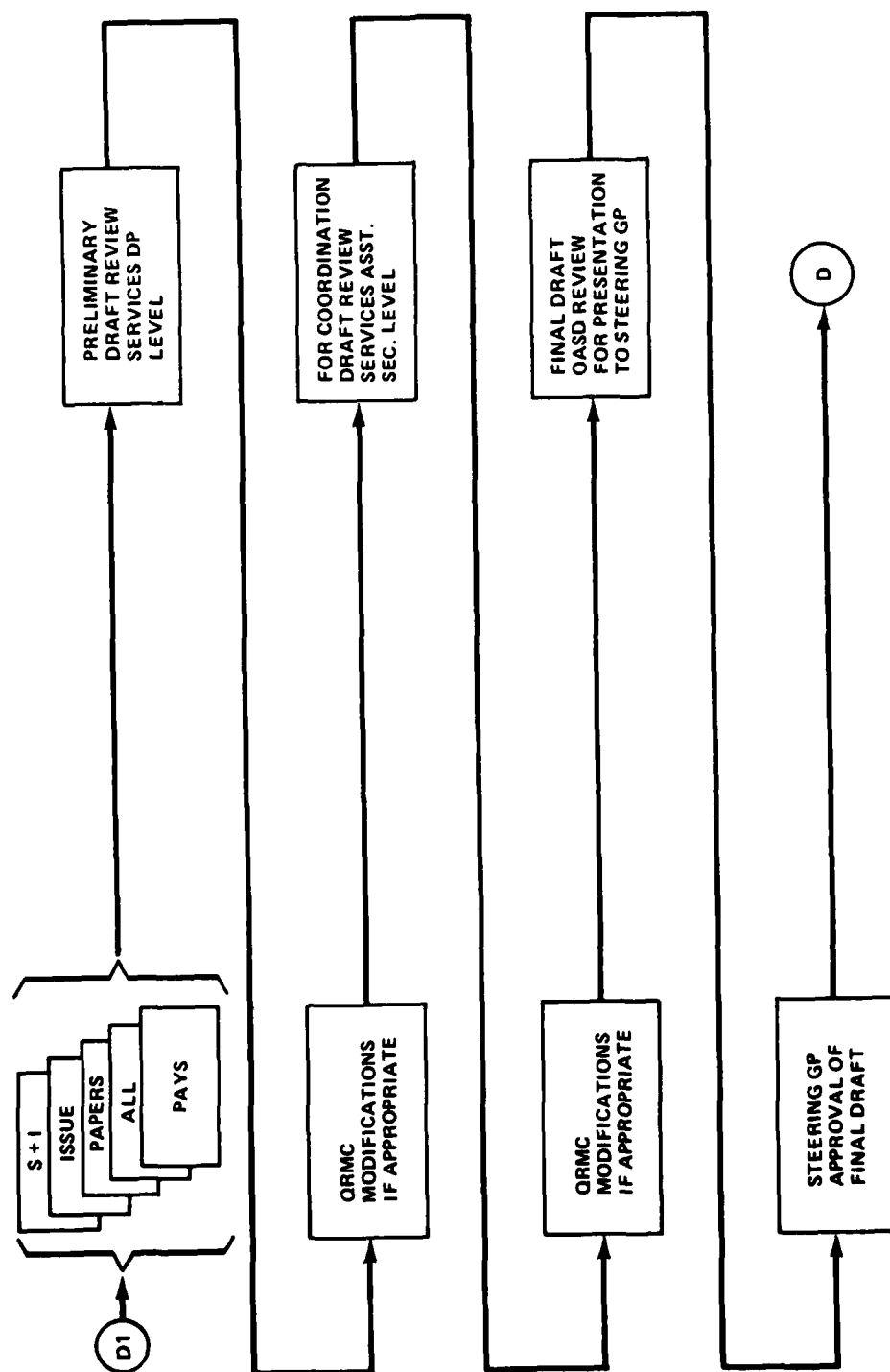
FIELD INTERVIEWS



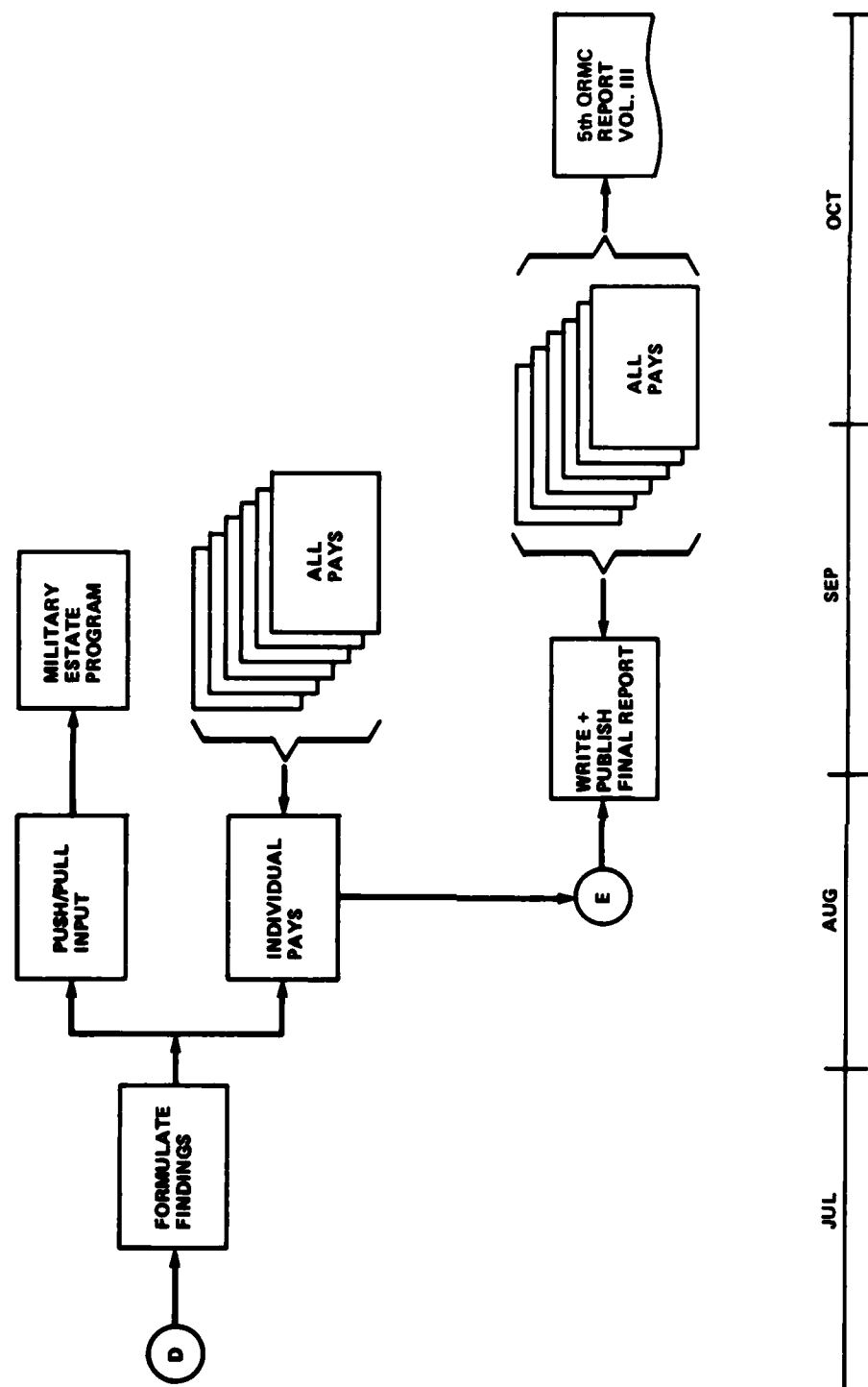
ANALYSIS PHASE



S + I ISSUE PAPER REVIEW PROCESS (SUB-ROUTINE)



FORMULATE FINDINGS AND RECOMMENDATIONS AND PREPARE REPORT



IV. REVIEW OF SPECIAL AND INCENTIVE PAYS STUDY

- A. Hazard Related: This category of pays provides special compensation to members of the Uniformed Services as an incentive for performance of hazardous duty required by orders involving certain skills. The hazard-related pay reviews begin on page 51.

- B. Incentive: This category of pays provides special compensation for the purpose of increasing the ability of the Uniformed Services to attract and retain personnel in certain skills. The incentive-related pay reviews start on page 215.

- C. Other: Pays in this category are neither clearly hazardous nor incentive, but provide compensation for or recognition of rigorous duty, unique responsibility, or other special circumstances. Family Separation Allowance (FSA II) is an allowance, not an S&I pay. Investigator Pay is a proposed pay submitted by the Air Force. These reviews begin on page 705.

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37 U.S.C. 301(a)(13)

INCENTIVE PAY: HAZARDOUS DUTY INVOLVING FREQUENT AND REGULAR
PARTICIPATION IN AERIAL FLIGHT BY AN OFFICER WHO
IS SERVING AS AN AIR WEAPONS CONTROLLER CREW
MEMBER ABOARD AN AIRBORNE WARNING AND
CONTROL SYSTEM AIRCRAFT

AIR WEAPONS CONTROL OFFICER FLIGHT PAY
(ENHANCED HAZARDOUS DUTY INCENTIVE PAY)

PRIMARY ANALYST
LCDR SHEILAH M. HUNTER, USN

ALTERNATE ANALYST
CAPT BARRY D. FAYNE, USAF

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AIR WEAPONS CONTROL OFFICER FLIGHT PAY

I. PURPOSE. To provide an incentive for performance of hazardous duty required by orders involving frequent and regular participation in aerial flight by an officer (other than warrant officer) who is serving as an air weapons controller crewmember (as defined by the Secretary concerned) aboard an airborne warning and control system aircraft (as designated by such Secretary) and who is not entitled to incentive pay under 37 U.S.C. 301a.

II. DATA SOURCES. The majority of data were provided by the Service staff of the Air Force. Although not a primary source of information, informal interviews were conducted with members of the USAF's 552nd Airborne Warning and Control Wing on temporary duty in San Diego, CA.

III. HISTORICAL PERSPECTIVE. When Aviation Career Incentive Pay (ACIP) was established in 1974, the officer crewmember Flight Pay authority was abolished (see the Historical Perspective of the ACIP and Crewmember/Non-crew member studies for greater detail). This resulted in flying air weapons control officers (AWCOs), along with all other non-rated officer crewmembers, receiving a significant Flight Pay reduction -- from a maximum \$245 per month to a flat \$110 per month. Through the late 1970's and early 1980's, the Air Force expressed concern in regard to significant manpower shortages in the Airborne Warning and Control System (AWACS) Controller career field (AFSC 17XX). During the House debate on the Uniformed Services Pay Act of 1981 it was stated that,

...the Air Force is 20 percent short captains, majors, and lieutenant colonels in weapons controller duties. ...Field grade volunteers have been almost nonexistent. For example, since the beginning of fiscal year 1980, the Air Force had only 17 field grade volunteers for 78 mission crew commander positions... As a result of this deficit, the Air Force has been forced to accept inexperienced aviators to fill senior weapons controller positions. [1]

It was theorized that the major reasons for the shortage of volunteers were: the ardousness of the duty; frequent, extended no-notice family separations; and the disparity between ACIP given pilots and navigators and Noncrewmember Flight Pay earned by the weapons controllers.

In response to these concerns, Congress, in the Uniformed Services Pay Act of 1981 (Pub. Law No. 97-60, 95 Stat. 992-994), authorized a special Hazardous Duty Incentive Pay for this category of officer, commonly referred to as Enhanced Hazardous Duty Incentive Pay (EHDIP). It was structured specifically to resolve Air Force shortages of experienced AWCOs by basing the monthly rate on the officer's cumulative years of

service in that duty, whether performed in the air or on the ground [2], and grade. However, to qualify for EHDIP, an individual must be filling a flying AWCO position. The EHDIP rates displayed in Table 1 became effective October 1, 1981. ACIP recipients and warrant officers are specifically precluded from drawing this pay.

Table 1
EHDIP Flight Pay Rates

Pay Grade	Years of Service														
	Under 2	Over 2	Over 3	Over 4	Over 6	Over 8	Over 10	Over 12	Over 14	Over 16	Over 18	Over 20	Over 22	Over 24	Over 25
O-7 & up	200	200	200	200	200	200	200	200	200	200	200	200	200	200	110
O-6	225	250	300	325	350	350	350	350	350	350	350	300	250	250	225
O-5	200	250	300	325	350	350	350	350	350	350	350	300	250	250	225
O-4	175	225	275	300	350	350	350	350	350	350	350	300	250	250	225
O-3	125	156	188	206	350	350	350	350	350	350	300	275	250	225	200
O-2	125	156	188	206	250	300	300	300	300	300	275	245	210	200	180
O-1	125	156	188	206	250	250	250	250	250	250	245	210	200	180	150

IV. METHODOLOGY. Although the implementing legislation did not restrict eligibility for the pay to Air Force officers directly, it is currently applicable only to that Service's members. Therefore, this study addresses the needs of the Air Force exclusively. In that context, the pay was put to the following tests:

1. Validity of Purpose. Is this pay necessary for the Air Force to attract and retain volunteers in sufficient numbers to meet its needs, both current and projected?

2. Credibility of Rates. Are the rates properly structured and set at the appropriate levels to effect the desired behavior?

V. ANALYSIS.

A. MANNING. The AWCO career field includes authorizations both in the air and on the ground, though the total number of ground positions is expected to decrease during the next three years. It is projected that, when all the airborne systems are fully developed, 45 percent of all AWCO authorizations will be flying related [3]. Table 2 contains the manning data for the total career field (ground and air) from FY78 through FY82 for Lieutenant through Lieutenant Colonel. These figures do not include students, transients, basic training, and temporary duty training. The manning profile seen here is reminiscent of nearly all other career fields studied that is, it is characterized by relatively low manning in FY78 and FY79, with a generally improving trend since that time.

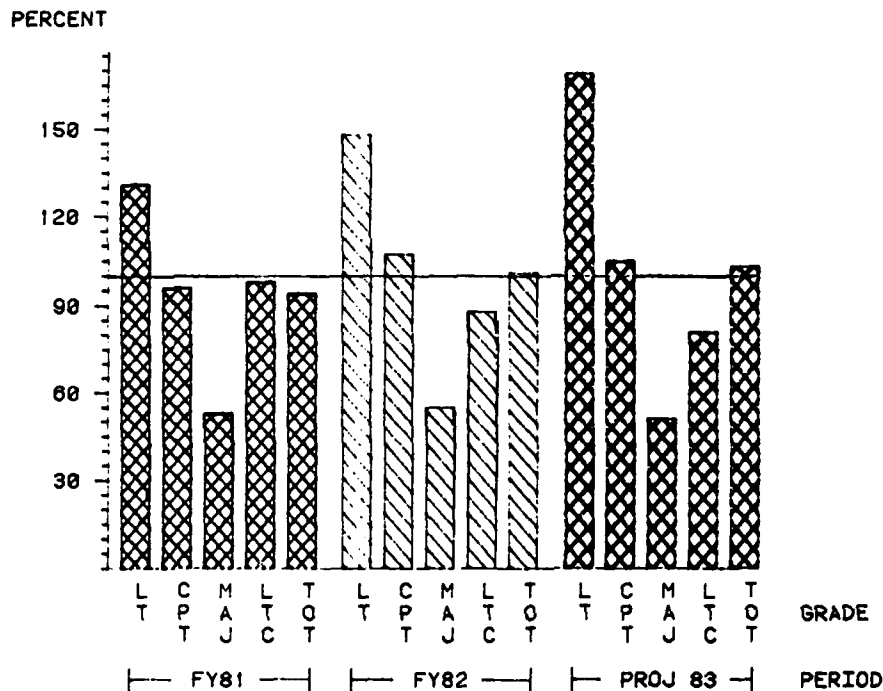
Table 2
Total AWCO Career Field Manning

FY	AUTH	ASGN	% MANNED
78	1,699	1,416	83%
79	1,808	1,636	90
80	1,882	1,803	96
81	1,928	1,875	97
82	1,944	1,880	97

Although some shortfalls are indicated, one's initial reaction is that the career field is reasonably healthy. However, a closer examination of the manning of flying AWCO positions by grade reveals a very different story. Figure 1 exhibits manning for FY81 through 1983 (projected). Clearly the authorizations were manned at or near 100% only through significant overmanning of the junior grades, particularly Lieutenants.

Figure 1

FLYING AWCO MANNING

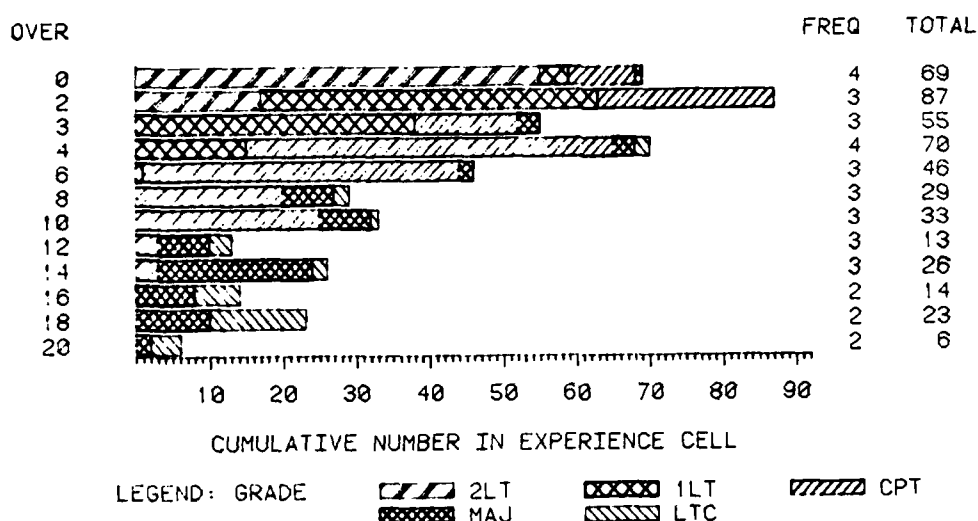


If those individuals assigned to flying duties in February 1983 are distributed by length of AWCO service, it is apparent that the experience shortage caused by grade imbalances is even more serious. Figure 2 shows the number of grades (FREQ) represented in each length-of-experience cell, the actual grades, and the number of officers having that amount of experience (TOTAL). As can be seen, many captains and some majors possess much less AWCO experience than their grades would suggest. Therefore, although on paper certain AWCO authorizations are manned at slightly better than 100%, in reality a shortfall, in terms of desired level of experience, exists.

Figure 2

AWCO FLT PAY RECIPIENTS

BY YEARS OF AWCO EXPERIENCE



FEBRUARY 1983

A major reason cited for the reluctance of AWCOs to volunteer for flying duty is the arduous nature of the duty. Table 3 displays actual Air Force average flying hours per crew per month in FY82 for eleven types of aircraft [4]. They range from a low of 15.2 hours per month to a high of 30.3 hours. The monthly average flight hours performed by AWCOs is reported to be 55 hours [3].

Table 3
FY82 Air Force
Flying Hours Per Crew
Per Month for Selected
Aircraft Types

<u>Aircraft Type</u>	<u>Avg. Hours</u>
A-10	22.9
B-52	25.1
C-5	20.7
C-130	29.9
C-135	17.3
C-141	30.3
F-4	15.2
F-15	15.7
F-16	15.8
F-111	17.8
FB-111	16.9

Another factor is the extended family separation associated with assignment to AWACS aircraft. In 1978-1979 the Rand Corporation, as part of the Manpower, Mobilization, and Readiness Program sponsored by the Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics) conducted a survey of DoD officers and enlisted personnel [5]. Air Force officer responses to the question regarding the amount of time they were separated from their dependents in the preceding 12 months is summarized in Table 4. The average time flying AWCs are separated from home during a year is 5 months [3]. This is longer than 91.3% of the 78,150 Air Force represented by the officers survey. In view of the expanding role of AWACS aircraft in global affairs, it is reasonable to expect that this time will increase in the foreseeable future.

Table 4
Amount of Time Air Force Officers
Were Separated from Their Dependents
in 12 Months Preceding Survey

<u>Months Separated</u>	<u>% of Total*</u>	<u>Cumulative %*</u>
none	47.0%	47.0%
1-2	29.4	76.4
3-4	14.9	91.3
5-6	5.3	96.6
7-8	1.3	97.9
9-10	0.7	98.6
11-12	1.5	100.0

*Rounded

These expectations are reflected in the projected flying AWCO authorizations contained in Table 5. Total authorizations are planned to increase over 9% by the end of FY87. The greatest growth will occur at the grade of major (12%), which is already critically undermanned at 51%.

Table 5
Projected Flying AWCO Authorizations

<u>FY</u>	<u>1LT</u>	<u>CPT</u>	<u>MAJ</u>	<u>LTCOL</u>	<u>TOTAL</u>
83	132	210	155	53	550
84	143	219	163	55	580
85	147	232	167	56	602
86	147	229	173	58	607
87	147	225	173	57	602

B. HAZARDS. It is a generally accepted belief that the potential hazards presented by frequent aerial flight are great. A review of Table 6, the number of aviation fatalities and major accidents which occurred from 1979 through 1982, supports that belief. It should be noted that these numbers do not include long term disabilities or other serious injuries known to result from these accidents. In addition, when asked to list the ten most hazardous officer and enlisted specialties based on Safety Center data between FY78 and FY82, each Armed Service included the various aviation occupations.

Table 6
Armed Services Major Aviation
Accidents and Resultant Fatalities

<u>Calendar Year</u>	<u>Major Accidents</u>	<u>Resultant Fatalities</u>
1979	256	182
1980	246	211
1981	227	236
1982	215	287
TOTAL	944	916

C. RATES. Based upon the character of shortages identified, the current rate structure should prove to be a positive influence. Whether or not it will be sufficient is too early to tell. As was mentioned previously, EHDIP was not authorized until October 1, 1981 nor implemented until December 1981. It is believed that a minimum of two years of data is necessary to determine whether observed behavior represents a trend or simply an unrelated action.

D. COSTS. There are two aspects of this issue: the cost of the program itself, EHDIP dollar outlays, and the cost of replacing those AWCOs who choose not to volunteer for flight duty. The difference

between the two represents the actual cost/benefit of the program. Table 7 reflects the training costs per AWCO by AWACS crew position, which were used to compute a weighted average cost of \$134,800. Assuming that an officer commences AWCO duties as an O-2 and rotates between flying and non-flying positions for the next 20 years (flying AWCO positions beyond that point are extremely limited), he will have earned about \$42,000 EHDIP in 1982 dollars. Table 8 contains the actual and projected program costs for FY82 to FY87 and the number of AWCOs who could be trained for the same dollar amount. Clearly, the number of possible replacements falls far below service needs, strongly suggesting that this is a cost-effective program.

Table 7
Length of AWCO Training and Average Total Cost

<u>Crew Position</u>	<u>Weeks</u>	<u>Cost*</u>
Weapons Director	35	\$184,800
Air Surveillance Officer	32	120,900
Mission Crew Commander	17	76,400

*Rounded

Table 8
EHDIP: AWCO Flight Pay Program Costs
Compared to Number of AWCOs Who Could
Be Trained for the Same Dollars

<u>FY</u>	<u>COST(\$000)</u>	<u>#AWCOs</u>
82 actual	\$1,325	10
83	1,535	11
84	1,829	14
85	1,898	14
86	1,914	14
87	1,906	14

VI. FINDINGS.

A. **VALIDITY OF PURPOSE.** A special incentive pay for flying Air Weapons Control Officers is necessary for the Air Force to attract and retain sufficient volunteers possessing the appropriate experience to meet its needs.

B. **CREDITABILITY OF RATES.** This pay has been in effect for too short of time to realistically evaluate the appropriateness of the rates.

VII. RECOMMENDATIONS.

- A. Retain AWCO Flight Pay in its current form.
- B. Reexamine the pay no later than the end of FY 85.

References

1. Congressional Record-House, H6235, September 15, 1981 (Remarks of Representative Skelton).
2. House Report No. 97-265 (Committee of Conference), accompanying S.1181, 97th Congress, 1st Session.
3. Headquarters United States Air Force, Chief, Entitlements Division, Directorate of Personnel Plans memo dated 14 March 1983.
4. Office of the Assistant Secretary of Defense (MRA&L), Department of Defense FY 1984 Force Readiness Report, Volume III: Personnel and Training Readiness, April 1983 (Draft Report).
5. Doering, Zahava D. and Hutzler, William P.; Description of Officers and Enlisted Personnel in the U. S. Armed Forces: A Reference for Military Manpower Analysis, R-2851-MRAL, March 1982.

Summary of Responses

Air Weapon Control Officer Flight Pay

Issues:

1. A special incentive pay for flying AWCOs is necessary for the Air Force to attract and retain sufficient volunteers possessing the appropriate experience to meet its needs.
2. The pay has been in effect for too short a time to realistically evaluate the appropriateness of the rates.

Department

Comments

Army

Concurs.

Navy

Concurs.

Air Force

Although Air Force fully concurs with the preliminary draft, they specifically concur only with Issue 1 at the departmental level. They stated that it is not clear at present that the current rates will be adequate in view of growing requirements. Since Issue 2 does not make a judgment in this regard, this statement is considered a qualified concurrence.

Coast Guard

Defers to the QPMC.

Public Health Service

Concurs.

National Oceanic and
Atmospheric Administration

Defers to those Services
which employ AWCOs.

Joint Chiefs of Staff

Concurs.

37 U.S.C. 301(a)(6)
INCENTIVE PAY: HAZARDOUS DUTY INVOLVING THE DEMOLITION
OF EXPLQSIVES AS A PRIMARY DUTY, INCLUDING
TRAINING FOR THAT DUTY

DEMOLITION DUTY PAY

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DEMOLITION DUTY PA

I. PURPOSE. To provide an incentive to those Uniformed Services personnel for the performance of hazardous duty required by orders involving the use or rendering safe of demolitions.

II. DATA SOURCES. The data utilized in this analysis were obtained from the Uniformed Services in response to 5th QRMC requests. Other sources of information include the police departments of Montgomery County, MD, Fairfax County, VA, and the Metropolitan Police Department, Washington, D.C., the Office of Personnel Management, the U.S Department of Labor, Control Demolition Corporation and Jet Research Center Inc. Interviews were held with Explosive Ordnance Disposal (EOD) personnel at Naval Amphibious Bases, Little Creek, VA and Coronado, CA, Edwards AFB, CA, Fort Bragg, NC, and Camp Lejeune, NC. A thorough review was made of prior compensation studies, including those of the Hook Commission (1948), The Strauss Commission (1952-53), The Gorham/Randall Panel (1962), and Staff Research Papers of the Third QRMC (1975-76).

III. HISTORICAL PERSPECTIVE. In 1948, the Hook Commission identified the demolition of explosives as an activity "... associated with exceptional risk and danger," and recommended that extra pay be authorized for demolition duty.¹ Subsequently, the Career Compensation Act of 1949 (Public Law 81-351) included demolition duty in the list of duties qualifying for hazardous duty incentive pay at the rate of \$100 per month for officers and \$50 per month for enlisted personnel. These rates were identical to the rates set for several other Hazardous Duty Incentive Pays, such as Glider Duty, Parachute Duty, and Experimental Stress.

The Career Incentive Act of 1955 (Public Law 84-20) Increased Hazardous Duty Incentive Pays to \$110 and \$55 per month for officers and enlisted personnel, respectively. No further change in the rate of DDP was made until 1981 when the Uniformed Services Pay Act (Public Law 97-60) increased the rate of all Hazardous Duty Incentive Pays by 50% for enlisted personnel. This brought the monthly compensation to \$83.

The Hook Commission recognized the incentive value of these hazardous duty pays, stating, "... the additional pay is now regarded frankly as a supply and demand differential, to induce capable men to undertake the known or assumed risks of flying, undersea operations, or other hazards."² The Senate report accompanying the 1981 pay increase reaffirmed the incentive value of these pays, justifying the higher rate with the statement, "The current rates have not been adjusted in more than 20 years, and this increase is needed to enhance the incentive value of this pay."³

IV. METHODOLOGY. This analysis of Demolition Duty Pay (DDP) will be accomplished in three sections. The first section will identify and describe by Service the number of personnel receiving the pay, project future requirements and cost, and then discuss the hazards involved in

demolition work. The second section of the analysis will investigate manning, attraction and retention within career groups of each Service. Finally, section three will address the appropriateness of demolition pay rates.

V. ANALYSIS.

A. SECTION ONE.

1. General. Of the seven Uniformed Services only four, the Army, Navy, Air Force, and Marine Corps, utilize Demolition Pay. The numbers of personnel who received the pay from FY72 through FY82 are shown in Table 1.

Table 1
DDP Recipients FY72 - FY82

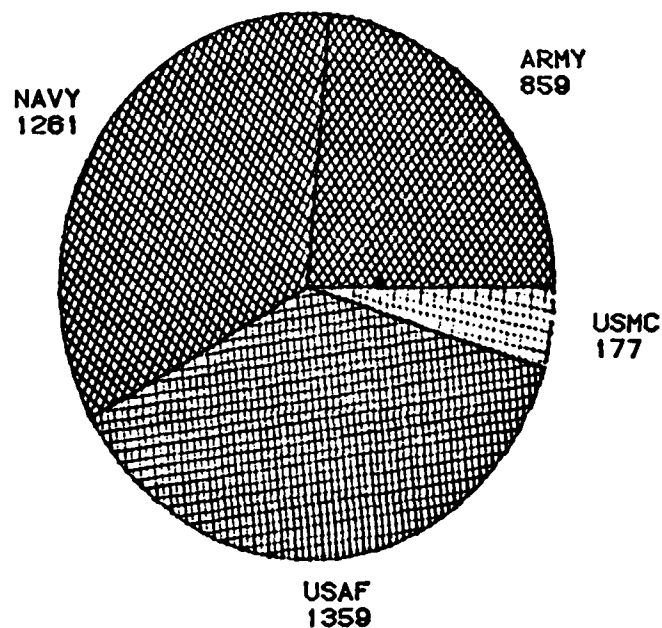
<u>Fiscal Year</u>	<u>Number of Personnel</u>
1972	3842
1973	3383
1974	3301
1975	2989
1976	2982
1977	2814
1978	3005
1979	3236
1980	3402
1981	3534
1982	3656

A breakdown of FY82 Demolition Duty Pay recipients by service is shown in Figure 1.

Figure 1

FY 82 DDP RECIPIENTS BY SERVICE

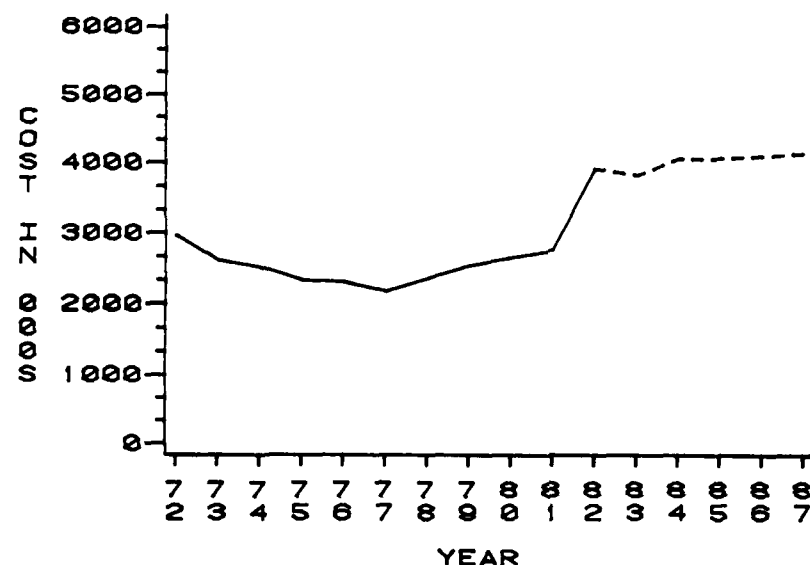
SUM OF NUMBER GROUPED BY TYPE



The number of Demolition Duty Pay recipients is expected to grow through FY84 and then remain relatively constant at about 4,500 through FY87. The bulk of the increases results from growth in Navy requirements. Figure 2 shows the historical and projected cost of Demolition Duty Pay.

Figure 2

COST OF DEMOLITION DUTY PAY FY72-FY87



The increased cost from FY81 to FY82 is due primarily to the higher rate of Demolition Pay for enlisted personnel authorized in 1981. The slight decrease from FY82 to FY83 reflects a migration away from Demolition Pay to diving pay by groups such as SEAL/UDT who dropped either Demolition or Parachute Pay in order to receive diving pay. (Prior to the 1981 Pay Act, personnel receiving Diving Pay were prohibited from receiving an additional Hazardous Duty Incentive Pay.)

2. Composition Of Service Programs. The majority of Demolition Pay recipients are members of Explosive Ordnance Disposal (EOD) units. These units are tasked with the detection, rendering safe, and the disposal of unsafe or unstable explosive, incendiary, chemical, biological, and nuclear ordnance and devices. The second major group of Demolition Pay recipients is personnel utilizing explosives in an offensive capacity, such as Navy underwater demolition teams, who use explosives as a combat skill. Finally, a small number of Air Force DDP recipients are personnel assigned to civil engineering duties.

a. Army. All Army DDP recipients serve in the EOD field. The Army had a FY82 requirement for 142 officer and 772 enlisted EOD personnel. For enlisted personnel, EOD is a career field, and soldiers can remain continuously assigned to EOD duties through pay grade E-9. Back-to-back assignments in the EOD field for officers are not looked upon favorably by promotion boards, and officers serve only about 4 years in EOD during a career.

b. Marine Corps. The Marine Corps had a FY82 requirement for 45 officer and 155 enlisted EOD personnel who comprise the total population of Marine Corps DDP recipients. Within the Marine Corps, EOD is a restricted career officer MOS which is fed exclusively by warrant officers. EOD is also a career field for enlisted personnel, and members can expect to serve continuously in EOD assignments throughout a career.

c. Navy. There are two groups of personnel within the Navy who receive DDP, EOD and Underwater Demolition/Sea-Air-Land teams (UDT/SEAL). FY82 Navy requirements for UDT/SEAL and EOD personnel include 319 officers and 1,191 enlisted men.

- EOD. Navy EOD personnel perform duties similar to those performed by EOD personnel in other services except they often do so underwater. Enlisted EOD members will serve continuously in EOD throughout a career while EOD officers will spend approximately one-half of a 20-year career in EOD billets.
- UDT/SEAL. The second group, UDT/SEAL, conduct unconventional warfare, which includes demolishing underwater and land obstacles, ship attack, and demolition raids. UDT/SEAL officers will average 16 years in the demolition field while enlisted personnel will serve 16 to 18 years.

It must be stressed that these groups of personnel (UDT/SEAL/EOD) are not just demolition personnel. In the course of performing warfare missions, their duties require the use of demolitions and diving skills. All SEAL/UDT and EOD personnel are trained in the use of advanced mixed gas scuba systems. Further, all SEAL/UDT personnel and about one-third of EOD personnel are required to parachute as a primary duty.

d. Air Force. FY82 Air Force requirements for personnel serving in the demolition field total 1,374 and include about 120 officers and 150 training positions. The bulk of these authorizations support the Air Force EOD program. A second group of DDP recipients are members of Combat Control Teams (CCT). The mission of CCTs is to establish assault zones in austere and nonpermissive environments including the placement of navigational aids, control of air traffic, provision of command/control communications and the removal of obstacles and unexploded ordnance with demolitions. These personnel may receive Parachute or Diving Duty Pay in addition to DDP. Lastly, a small group of personnel in the civil engineering field, primarily serving in Red Horse (civil engineering) squadrons, are required to maintain a qualification in the use of demolitions. Both EOD and CCT are career fields for Air Force enlisted personnel. EOD officers will typically serve 8-12 years in the field during a career. Members assigned to demolition duty in the civil engineering field will serve only random tours.

3. Hazards Associated with Demolition Duty. The hazards of dealing with explosives are obvious, but just as threatening is the potential for hazard. For no other field is this potential greater than in Explosive Ordnance Disposal (EOD). This is also the field in which most DDP recipients serve. The task of EOD groups is to locate unexploded ordnance or devices, determine the hazards involved, render devices safe through neutralization or destruction, and to dispose of the devices. The types of ordnance or bombs that are handled may include explosive, incendiary, chemical, biological, or nuclear. Ordnance may be domestic, foreign made, enemy, or terrorist and may, for a variety of reasons, have become unsafe or unstable. Bombs or other explosive devices may be magnetic, time delayed, acoustic, proximity, or employ trip wires. Fail safe or tamper-proofing features may also be involved. Because of age or chemical deterioration, the device may present an even greater potential for harm. Ordnance that has been activated and failed to detonate due to a mechanical malfunction may yet explode if disturbed. There is an endless variety of explosive devices with which EOD personnel must be familiar. The fact that new types of ordnance and explosive devices are developed and placed in use does not alleviate the necessity to remain familiar with all devices which have previously been in existence. Foreign-made ordnance and devices greatly increase the variety of devices with which the EOD technician must remain familiar. Most recently, an increase in terrorist activity has expanded the contingencies and dangers for which EOD personnel must prepare.

EOD personnel face real and potential hazards beginning during initial training that is continued throughout their service in EOD at a minimum exposure of once per month. Demolition personnel train and work with live explosives; accident and fatality data reflect the exceptional training, expertise and professionalism of these groups (Table 2).

Table 2
Demolition Casualty Data - All Services
FY 78-82

<u>FY</u>	<u>Non-Fatal Injuries</u>	<u>Fatalities</u>
78	1	0
79	1	0
80	1	3
81	3	0
<u>82</u>	<u>5</u>	<u>0</u>
Total	11	3

As Table 2 indicates, reported casualties are few, and this record is believed attributable to the safety-oriented nature of the EOD/ demolition fields. Neither data documenting the number of bombs or pieces of ordnance rendered safe, nor the number of explosions triggered are available. Thus, a casualty rate cannot be calculated. More recently, however, in March 1983, a mishap at Fort Dix, NJ killed four Army EOD personnel and left two others critically injured. This accident illustrates the lethal hazards of demolition duty. Personnel working with explosives whether in an EOD capacity or as a combat skill are surely exposed to greater risk in peacetime than most other members of the Uniformed Services. The potential for injury or death is compounded for those personnel utilizing or disarming explosives underwater, where total concentration required for the demolition task at hand may be disrupted by other concerns required in the course of diving.

B. SECTION TWO. This section examines manning, attraction, and retention in the career demolition fields. Career demolition fields with populations sufficiently large to allow meaningful analysis include the EOD programs of the Army, Navy, and Air Force, the Navy UDT/SEAL, and the Air Force CCT programs.

1. Manning. For the purposes of this analysis, manning levels were determined by comparing the number of personnel assigned to demolition duty to the number of personnel authorized in demolition duty positions. Historical and current manning levels for the Services are exhibited in Table 3.

Table 3
Manning in Career Demolition Programs
Authorized vs Assigned

Service	FY78	FY79	FY80	FY81	FY82
Navy ¹	666/582	735/587	701/659	791/741	792/783
- SEAL/UDT	(87.4%)	(79.9%)	(94.0%)	(93.7%)	(98.9%)
- EOD	377/330	391/302	397/271	400/276	399/315
	(87.5%)	(77.2%)	(68.3%)	(69.1%)	(79.0%)
Army	871/756	898/718	907/723	914/797	914/859
	(86.8%)	(80%)	(79.7%)	(87.2%)	(94.0%)
Air Force ²	not	770/762	804/771	878/763	949/841
- EOD	avail	(99%)	(95.9%)	(86.9%)	(88.6%)
- CCT	not	236/211	234/243	284/272	338/341
	avail	(89.4%)	(103%)	(95.8%)	(100%)
Marine Corps ³	not	not	not	204/192	200/177
	avail	avail	avail	(94.1%)	(88.5%)

¹ Manning reflects enlisted personnel only.

² Air Force figures do not reflect manning of approximately 87 non-career Red Horse demolition authorizations.

³ Exact manning levels prior to FY81 unavailable.

Table 3 shows that some manning shortfalls exist in the demolition fields of all Services except CCT. In FY82 the Navy UDT/SEAL and Air Force CCT manning was the highest. In comparison, the Navy EOD field was the lowest and has suffered severe shortfalls for a protracted period of time. The attainment of 94% manning for Army EOD is recent; Air Force EOD manning shows a slight downward trend. Overall Service manning in FY82 was approximately 92%.

Table 4 displays current and projected authorizations for demolition duty by service. Navy projections show substantial increases (over 500) from FY 82 through FY87 due to increases in both SEAL and EOD programs. The size of other service programs are currently projected to remain relatively constant through FY87.

Table 4
Demolition Duty Authorizations
FY 1982 - FY 1987

Service	Actual		Projected			
	1982	1983	1984	1985	1986	1987
Army	914	965	965	965	965	965
Navy	1510	1574	1917	1937	1966	2025
USMC	200	188	184	184	184	184
USAF	<u>1374</u>	<u>1420</u>	<u>1420</u>	<u>1420</u>	<u>1420</u>	<u>1420</u>
TOTAL	3998	4147	4486	4506	4535	4594

2. Attraction. Assignment to demolition duty is accomplished on a volunteer basis. Thus, attractiveness must be maintained in order for demolition duty to successfully compete with other career fields. The hazardous nature of the duty is a disadvantage in attracting qualified applicants. A second disadvantage is that demolition training provides minimal applicability to civilian sector jobs unlike many other career fields for which a substantial civilian job market exists. There are relatively few civilian jobs to which demolition experience may be relevant. These facts provide substantial disincentives for volunteering for demolition duty.

Inability to attract sufficient volunteers to the demolition field is a problem. The Navy states that shortages of qualified enlisted volunteers for UDT/SEAL and EOD training are the primary reason for chronic manning shortfalls in these programs. Table 5 shows the actual input of Navy enlisted personnel to UDT/SEAL and EOD training as a percentage of planned input for FY79 through FY82.

Table 5
Input to Navy Demolition Training Courses

Category	FY79	FY80	FY81	FY82
UDT/SEAL	87.8%	66.8%	67.2%	84.4%
	(351/400)	(267/400)	(168/250)	(211/250)
EOD	46.7%	50.9%	95.0%*	74.9%
	(42/90)	(89/175)	(190/200)	(131/175)

*High input for FY 81 reflects trial program which sent personnel directly to EOD training upon completion of basic pipeline training. Program discontinued because of high training attrition rates for these personnel.

Fill rates for Army EOD entry level training are also low. Table 6 shows actual input of Army enlisted personnel to phase I demolition training as a percent of desired input for fiscal years 1978 to 1982.

Table 6
Inputs to Army Demolition Training Courses

<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82*</u>
52%	48%	72%	44%	55%
(221/425)	(167/347)	(229/320)	(253/570)	(53/97)

* The drop in FY82 requirements and input was due to an alternate training pipeline for new accessions.

Table 6 shows that the Army has encountered difficulties in obtaining their desired number of volunteers for initial demolition training. On 1 October 1982, the Army instituted an enlistment bonus program for personnel recruited for a four-year enlistment in the EOD field. The current bonus level is \$3,000.

The Air Force initiated the use of an enlistment bonus in 1980 for personnel entering the EOD career field in order to increase attractiveness and, concurrently, manning levels. The EOD career field is one of only four fields for which the Air Force offers an Enlistment Bonus. Enlistment Bonuses are used by the Air Force only for those fields which continue to be characterized by a particularly difficult recruiting environment and high training attrition. Presently, an Enlistment Bonus of \$2,000 is offered for personnel entering the EOD field who successfully complete training and obligate themselves for six years. Even with the enlistment bonus, attrition rates in EOD training are quite high. In FY80, the Air Force enlisted 144 personnel in the EOD skill, yet only 15 actually qualified for the bonus. For FY81, only 74 of 198 EOD enlistees met all requirements for the Enlistment Bonus. For FY82, 332 entered the EOD Enlistment Bonus program. As of March 1983, only 51 were working in the EOD field having qualified for the bonus, while 98 still remained in training.

3. Training. Service personnel serving in demolition duty positions receive extensive screening and training prior to undertaking their duties. Training courses are demanding and lengthy, particularly for EOD personnel. Most EOD training is conducted in several consecutive phases, and may include an introductory phase. The Army provides chemical training for all service personnel at Redstone Arsenal, AL. This phase of training is about three weeks in length. After the chemical phase, EOD personnel receive approximately 20 weeks of ordnance training at the Navy EOD School, Indian Head, MD. Course content for all service personnel during this phase is the same with some exceptions. Navy personnel receive additional training in underwater ordnance, and not all Army personnel receive nuclear ordnance training. Thus, initial EOD training is approximately six months in length. The training for Navy EOD personnel is extended by an additional five months for diver training. (UDT/SEAL training totals six months for both demolition and diving training.)

The rigorous academic training required of EOD personnel contributes to substantial in-training attrition and severely hampers accessions in the demolition fields. Navy enlisted EOD and UDT/SEAL training attrition is between 55% and 60%. However, the diving portion of the training accounts for a substantial part of the attrition. The Air Force reports an overall attrition rate of 49%, with 23% attrition in the introductory phase, 11% in the chemical phase, and 25% in the explosive ordnance phase. Both the Army and Marine Corps have a 22% to 23% overall enlisted attrition rate in EOD training.

Training costs for enlisted EOD personnel range from \$12,400 for Air Force personnel to over \$30,000 for diving-trained Navy EOD personnel. For officers, training costs range from \$23,200 to \$47,000.

4. Retention. Figure 3 shows FY82 service requirements for officers within the demolition field. Analysis of continuation data for these small groups of officers is not meaningful. The Navy has the largest requirement for demolition-qualified officers and is generally satisfied at the present time with officer accessions and retention in both the UDT/SEAL and the EOD communities. The Marine Corps has a very small requirement for EOD officers and this community constitutes a restricted MOS with accessions from the warrant officer force. Army EOD officers will serve in the EOD field periodically throughout a career, but continuous service in EOD is discouraged. Air Force EOD officers are also not continuously assigned in the EOD field. On balance, there is not an officer manning problem.

Figures 4, 5, and 6 show reenlistment rates for groups of demolition-qualified enlisted personnel within the Navy, Army and Air Force, respectively. Data are displayed for first-, mid- and career-term reenlistments and are compared with the overall reenlistment rates for the Service involved.

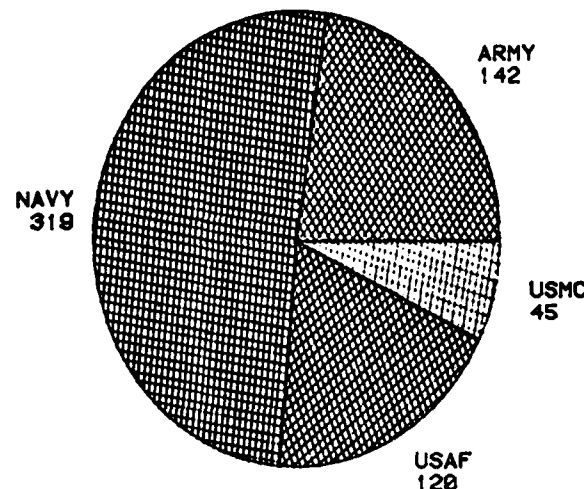
a. Navy (Figure 4). Navy EOD reenlistment rates are quite high in comparison to the all-Navy rate except for the third reenlistment point. The latter may be attributable to a strong civilian market for these personnel as experienced divers. EOD reenlistment rates also compare favorably with those for the UDT/SEAL community. High retention within the EOD community may be reflective of the older, more mature, career-oriented population comprising this field. The Navy enlisted EOD force has an average length of service of approximately 12 years. UDT/SEAL reenlistment rates are also generally high in comparison to the all-Navy rates, yet consistently lower than EOD reenlistments for all but the third term. Reenlistment rates for both groups show a general upward trend.

b. Army (Figure 5). First term Army EOD reenlistments generally reflect overall Army first term trends in direction (up or down) although they are changing in greater increments. EOD reenlistment rates exceeded all Army rates in FY80 through FY82 at the first-term. Mid-term EOD reenlistments closely follow all-Army reenlistments and, while gener-

Figure 3

OFFICER DEMOLITION REQUIREMENTS BY SERVICE

SUM OF NUMBER GROUPED BY TYPE



FY 82

ally high, are on a downward trend. Career term EOD rates are also high and comparable to all-Army rates until FY82 when they dropped below. The low FY-82 rate reflects the reenlistment of 59 of 66 eligible careerists. Because of the small number of personnel in this zone, rates may fluctuate widely.

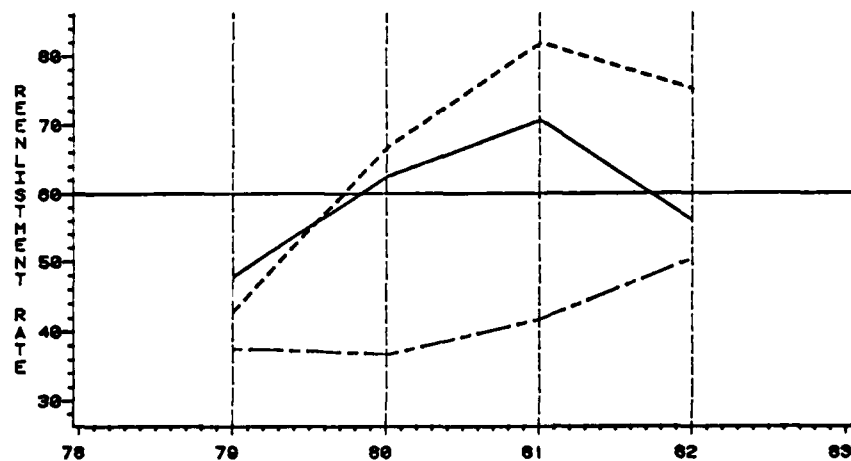
c. Air Force (Figure 6). In comparison to the overall Air Force rates, CCT reenlistment rates are good at all terms, particularly first-term. EOD rates also exceed the all-Air Force rates in most instances.

d. Marine Corps. Recent overall reenlistment rates for the small group of Marine Corps EOD personnel also exceed or equal overall Marine Corps rates.

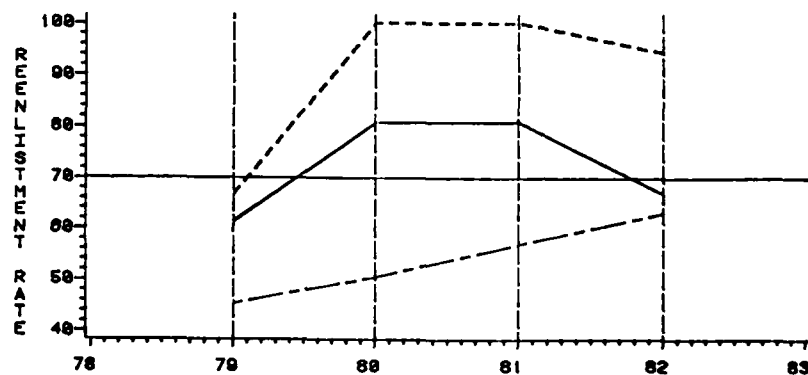
In summary, reenlistment rates for career service demolition duty personnel are high, generally exceeding the average rates for their Service. This is in sharp contrast to the problem of initial attraction to the field.

Figure 4

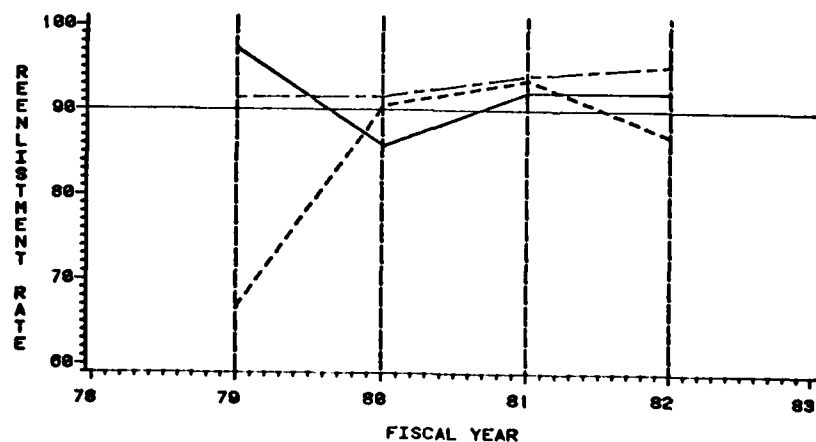
NAVY DEMOLITION REENLISTMENT RATES FIRST TERM



SECOND TERM

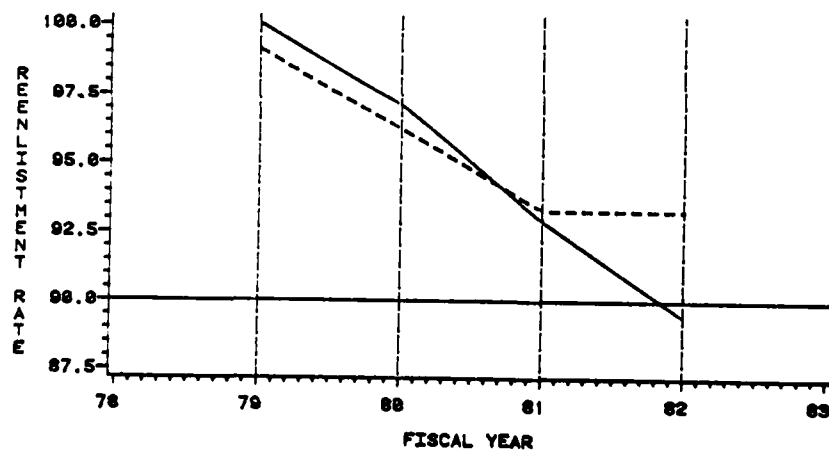
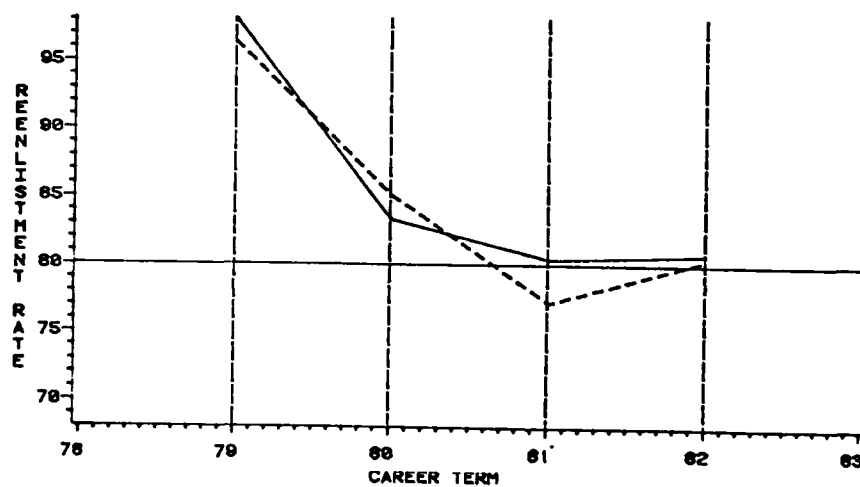
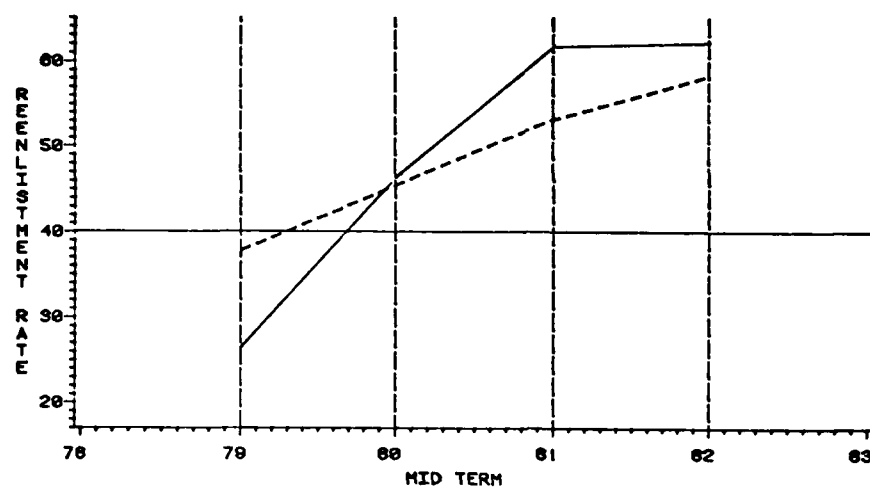


THIRD TERM



LEGEND: TYPE — SEAL — EOD — ALL NAVY

Figure 5
ARMY DEMOLITION REENLISTMENT RATES
 FIRST TERM

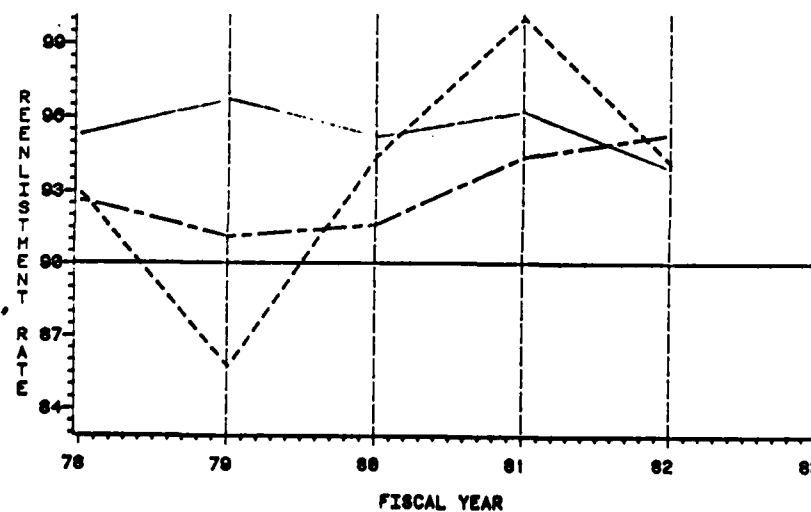
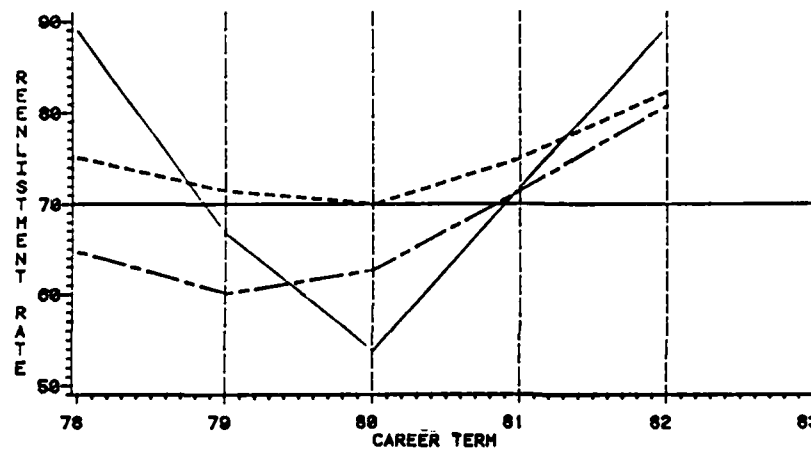
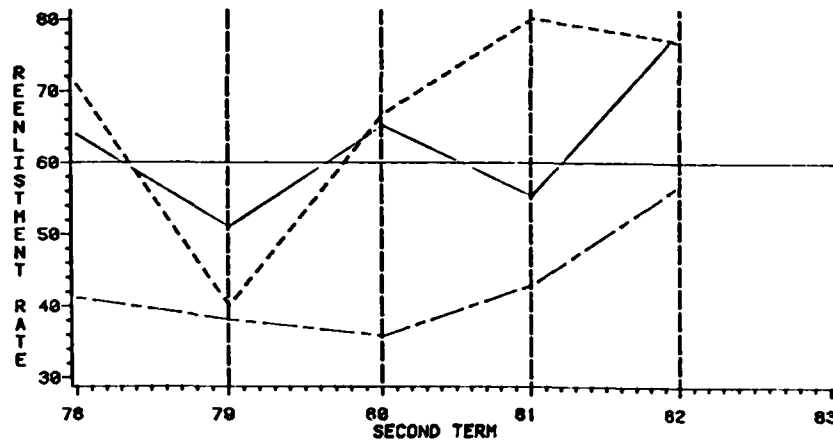


LEGEND: TYPE ——— EOD - - - - ALL ARMY

Figure 6

AIR FORCE DEMOLITION REENLISTMENT RATES

FIRST TERM



LEGEND: TYPE
 — EOD
 - - - ALL AIR FORCE
 . . . CCT

C. SECTION THREE. In this section of the analysis, the financial compensation that is offered to demolition personnel is investigated, and comparisons, where possible, are made with personnel doing similar work in other sectors of the economy.

1. Current Rates of DDP. Hazardous Duty Incentive Pay is currently paid to qualifying members at the rate of \$110/month for officers and \$83/month for enlisted members. Since the institution of DDP in 1949, these rates have increased by \$10/month for officers and \$33/month for enlisted personnel. The rates have not kept pace with either inflation or basic pay. Table 7 shows DDP as a percentage of basic pay for selected years from 1949 to 1983. While in 1949 DDP amounted to between 21 and 40 percent of basic pay for the categories of personnel displayed, it now represents between only 5 and 10 percent for those same categories. It is clear that DDP does not currently provide the level of compensation it once did.

Table 7
Demolition Pay as a Percentage of Base Pay*

Pay Grade	Years of Service	Oct 1949	Apr 1955	FY81	FY82	FY83
E-4	3	40%	39%	8%	11%	10%
E-5	6	31%	29%	7%	9%	9%
E-6	10	25%	24%	6%	8%	7%
E-7	14	21%	20%	5%	6%	6%
O-3	6	29%	27%	6%	6%	5%
Effective DDP Rate	—	\$100/ \$150	\$110/ \$ 55	\$110/ \$ 55	\$110/ \$ 83	\$110/ \$ 83

* Rounded

There are three broad categories of duties performed by DDP recipients: EOD, combat-related, and civil engineering. Of these categories, it is likely that EOD duties generally pose the greatest risk because these personnel deal directly with defective or often unfamiliar devices. The offensive use of demolitions under simulated combat conditions or underwater may pose a lesser threat to personnel because the explosives utilized normally will be in sound working condition and of a type familiar to the user. The use of explosives in an engineering capacity may represent the least threat, as their use generally will be in a controlled environment.

Categorization of duties may initially suggest different rates of DDP. However, different levels of pay for various categories of duty is not considered appropriate. Inequities between generalized categories of personnel may arise with varied rates based upon category. For example, an EOD unit, because of its location or assignment, may be called upon only infrequently to perform, while during the same period a combat demolition unit or civil engineering group may conduct extensive operations or training. In this case, a higher rate for the EOD unit would appear inequitable, because it was not as frequently exposed to the risk of demolitions. Also, an exact measurement of the degree of risk experienced by the various categories would be difficult if not impossible to determine, and would vary considerably from unit to unit. Therefore, personnel qualifying for DDP under the provisions of the DoD Military Pay and Allowances Entitlements Manual and Executive Order 11157 should receive the same rate of pay, regardless of the nature of their duties.

A second issue is the concept of varied DDP rates based upon individual skill level. For example, a "senior" EOD technician would receive a higher rate of pay than the "basic" level and a "master" EOD technician a higher rate than a "senior" level. This structuring of rates is also not considered appropriate. While a rate increase within the DDP rate structure may have some incentive value, the increases would be necessarily quite small. Further, as personnel advance in skill and proficiency, the degree of hazard they encounter may actually decrease due their increased competency.

A third related issue is the difference between rates for officers and enlisted personnel. In the case of the EOD field there may exist some difference in the degree of exposure encountered by officer and enlisted personnel. This difference could also be said to exist between enlisted men of different pay grades and officers of different ranks. To precisely quantify this difference and provide compensation based on exact degrees of risk for each level is not considered feasible and would probably generate additional perceived inequities. Therefore, rates should be equal for both officer and enlisted personnel.

From Table 7, it is seen that DDP currently provides between only 5% and 10% of the basic pay of typical recipients. To restore the value of DDP to levels represented by the \$100/mo rate for officers and \$50/mo for enlisted members in 1949 would require increases in current rates to over \$300/mo for enlisted and almost \$600/mo for officers. These rates are not appropriate when evaluated in light of other special and incentive pay rates presently in effect. Further, as recently as 1980, Congress took note of the rates of the Hazardous Duty Incentive Pays and increased the enlisted rate to \$83/mo. Assuming that \$83/mo represented the appropriate rate in 1980, the current rate of DDP for enlisted members based upon CPI increase should be roughly \$100/mo. In order to avoid reduction in payments to officers, and because the \$100/mo rate is based upon a generally increasing CPI, a flat rate of \$110/mo for both officers and enlisted personnel is believed currently appropriate.

2. Total Compensation. In attempts to meet requirements for personnel in the demolition field, the Services use other Special and Incentive pays in addition to Demolition Duty Pay. Additional pays currently offered to personnel in the demolition fields are discussed below by service.

a. Navy. Selective Reenlistment Bonuses (SRBs) are offered to SEAL/ UDT and EOD personnel at a multiple of 6 for zone A (21 mo - 6 yrs) and B (6-10 yrs) reenlistments. The SRB is also based upon Service need for divers, and personnel in these fields also receive Diving Pay. As divers, SEAL/UDT and EOD personnel also qualify for Shortage Specialty Proficiency Pay. The Navy does not offer an enlistment bonus, but prefers instead to recruit EOD personnel later in their service careers believing more mature, service-familiar individuals will be more successful in EOD training and the EOD field.

b. Army. In recent years the Army has paid SRBs to EOD personnel in Zones A and B with an average multiple of 2. The SRBs were terminated in June 1982. However, an EOD Enlistment Bonus of \$3,000 was recently initiated.

c. Marine Corps. The Marine Corps currently offers EOD personnel an SRB at a multiple of 3 for Zone A only.

d. Air Force. The Air Force currently utilizes SRBs at a multiple of 2 for Zone A reenlistments and at a multiple of 1 for both Zones B and C (10-14 yrs) in addition to the previously discussed Enlistment Bonus. CCT personnel also qualify for SRBs which are presently offered for all Zones at a multiple of 3. CCT members also qualify for either Parachute or Diving Pay.

Varying combinations of Special and Incentive pays based upon the requirements of a given Service appears appropriate. For example, while the Air Force is having some degree of success in attracting personnel to the EOD field utilizing an Enlistment Bonus, high training attrition may, in part, be caused by the relatively youthful and inexperienced Air Force student population.

3. Comparison. The types of duties performed by Service DDP recipients do not lend themselves to direct comparison with civilian occupations. Working with explosives, bombs, and ordnance, the clearance of underwater obstacles, demolition raids and target attacks are activities normally falling within the realm of the military services. In fact, the Services provide bomb disposal services for a great number of local jurisdictions. The following paragraphs provide limited comparison with compensation offered to employees in other sectors of the economy.

a. Public Sector. A pay differential is offered to Federal employees for work with, or in close proximity to, explosive or incendiary materials. For General Schedule (GS) employees, a 25% differential is authorized. Wage Grade (WG) personnel receive either an 8% or 4% pay

differential, depending on whether the work presents a high or low degree of hazard. The Metropolitan Police Department of the District of Columbia maintains an Explosive Ordnance Disposal Unit and provides to police officers assigned to EOD duty an annual incentive of \$2,270 in addition to basic compensation. The Fairfax County, Virginia Police Department has recently implemented a system which provides a 5% increase in compensation to officers having specialized experience, skill and training. Qualified bomb technicians are eligible for this incentive.

b. Private Sector. During 1977, the U.S. Civil Service Commission conducted two studies of compensation practices for unusual or hazardous working conditions. One study consisted of a survey of non-federal compensation practices for employees exposed to risks and physical hardships. The second was a study of major collective bargaining agreements which provided identifiable "add-ons" for work under hazardous or unusual conditions. The results of these studies indicated that personnel working with explosive or incendiary materials who received identifiable extra compensation for the hazards were compensated at a variety of rates including \$300/yr, \$100/mo, 10%/mo, 100%/hr and between \$.15 and \$1.00/hr.⁴

More recent information provided by Control Demolition Company of Baltimore, MD and Jet Research Center, Inc. of Arlington, TX, indicates that the job market for demolition-qualified individuals within the private sector is limited and that often demolition personnel or "blasters" will be hired only to work a specific job or project and will be let go upon completion. Average annual salaries for demolition personnel are in the \$15,000-\$18,000 range. Structural or civil engineering trained demolition personnel may earn higher salaries.

c. Foreign Armed Forces The Armed Forces of several countries with military structures similar to that of the U.S. make special payments for the use of demolitions. Australian specialists handling "unpredictable" explosive ordnance receive about \$17 per occurrence to a maximum of approximately \$100/mo. Canadian demolition pay amounts to about \$85/mo, while the Federal Republic of Germany pays demolition handlers between approximately \$17/mo and \$435/mo based upon the type of work involved.⁵

VI. FINDINGS.

A. A valid need for Demolition Duty Pay currently exists and will exist in the foreseeable future.

1. Demolition duty, particularly in the Explosive Ordnance Disposal (EOD) field, exposes personnel to greater risks that those encountered by most Service personnel.

2. Enlisted manning in demolition fields, especially EOD, is below required levels.

3. Low attraction of personnel to demolition fields is a primary cause of undermanning.

4. High attrition in EOD training is also a major cause of undermanning.

5. Retention of personnel in demolition fields is generally satisfactory.

B. Current rates of Demolition Duty Pay are generally adequate to compensate for the hazards of demolition duty.

1. The rate of DDP should be uniform for officers and enlisted personnel.

2. A DDP rate of \$110 per month for both officers and enlisted personnel is currently appropriate.

3. Judicious use of other special and incentive pays, i.e. Enlistment Bonuses, SRBs, and the proposed Special Duty Assignment Pay (replaces Proficiency Pay) along with other management actions should continue in order to resolve manning, attraction and retention problems and maintain satisfactory retention level.

VII. RECOMMENDATIONS.

A. Continue Demolition Duty Pay.

B. Award officer and enlisted personnel \$110 per month for performance of demolition duty.

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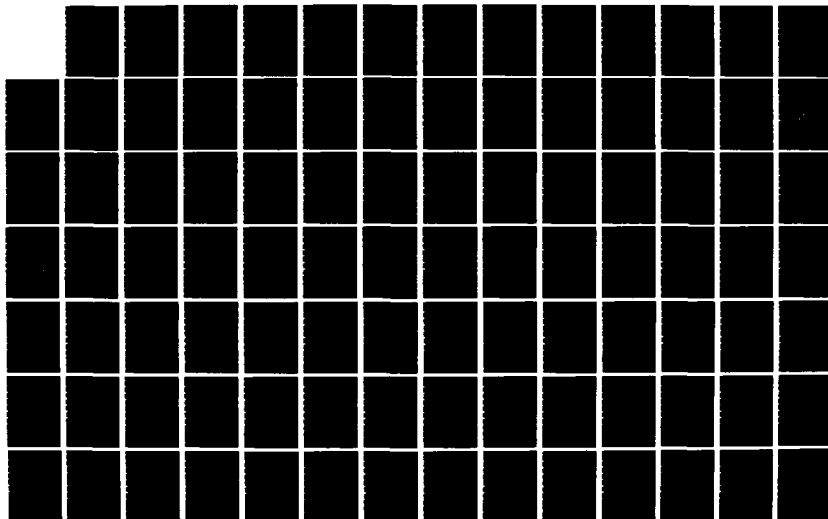
QUADRENNIAL REVIEW OF MILITARY COMPENSATION (5TH)
VOLUME 3 SPECIAL AND INCENTIVE PAY(S) OFFICE OF THE
SECRETARY OF DEFENSE WASHINGTON DC NOV 83

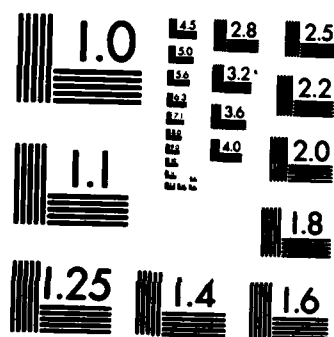
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

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SUMMARY OF RESPONSES

Demolition Duty Pay

Issues:

1. The rate of Demolition Duty Pay should be uniform for officer and enlisted personnel.
2. A DDP rate of \$110/month for both officer and enlisted personnel is appropriate.

Department

Comments

Army

Concurs.

Navy

Concurs except proposes rates scaled by pay grade so pay level acts as an incentive to obtain volunteers in the required numbers and quality.

Air Force

Nonconcurs. Believes pay should be incentive based versus hazard based. Officer/enlisted rate differential should remain. Officer rate should be \$165/month.

Coast Guard

Defers to QPMC Staff.

NOAA Corps

Defers to Service using Demolition Pay.

Public Health Service

Concurs.

Joint Chiefs of Staff

Concurs.

LEGISLATIVE IMPLICATIONS

Demolition Duty Pay

Amend 37 U.S.C. 301(c)(1) to reflect the increase in the enlisted rate by eliminating any reference to an enlisted rate and deleting the word "officer" in regard to the \$110 rate.

37 U.S.C. 301(a)(7), (8) AND (9)
INCENTIVE PAY: HAZARDOUS DUTY INSIDE A HIGH OR
LOW PRESSURE CHAMBER; AS A HUMAN
ACCELERATION OR DECELERATION EXPERIMENTAL
SUBJECT; AND AS A HUMAN TEST SUBJECT IN
THERMAL STRESS EXPERIMENTS, RESPECTIVELY

EXPERIMENTAL STRESS DUTY PAY

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EXPERIMENTAL STRESS DUTY PAY

I. PURPOSE. The purpose of Experimental Stress Duty Pay is to provide an incentive to uniformed personnel for the performance of hazardous duty required by orders involving acceleration or deceleration testing, thermal stress experiments, or high or low pressure chamber duty.

II. DATA SOURCES. Data were obtained from the Service Staffs of the Army, Navy and Air Force. The Marine Corps, Coast Guard, Public Health Service (PHS), and National Oceanic and Atmospheric Administration (NOAA) do not use Experimental Stress Duty Pay. Additional information was obtained from the National Aeronautics and Space Administration and the Federal Aviation Administration. Although not a primary data source, a field interview was conducted with Experimental Stress Duty Pay recipients at Edwards AFB, CA.

III. HISTORICAL PERSPECTIVE. In recognition that certain duties "subject volunteers to considerable physical discomfort and danger to health and, in some cases, to life,"¹ duty as a low pressure chamber inside observer and duty as a human acceleration or deceleration experimental subject were added to Hazardous Duty Incentive Pays. These were set forth by the Career Incentive Act of 1955 (Pub. L. No. 84-20). Pay rates were established in line with other Hazardous Duty Incentive Pays at \$110 per month for officers and \$55 for enlisted personnel engaged in these duties. The Act of August 28, 1957 (Pub. L. No. 85-208) further amended the 1955 Act to provide incentive pay for human test subjects in thermal stress experiments. In a letter to the President of the Senate, The Secretary of the Air Force cited the need "to provide the necessary volunteer subjects and to compensate them [test subjects] for the serious hazards involved," plus provide "hazard-incentive pay similar to that now awarded human subjects in acceleration-deceleration experiments."² Damage from the risk involved, he said, "May not be reversible."³

The pressure chamber pay provision was further expanded by the Uniformed Services Pay Act of 1963 (Pub. L. No. 88-132) to include high or low pressure chambers, since with the "increased endeavors in space and underwater warfare, there is a growing requirement for personnel to engage in experiments involving physiological and biological changes encountered in unusually high or low pressure environments."⁴ Collectively, these are more commonly known as experimental stress duties. The original rates remained in effect until the Uniformed Services Pay Act of 1981 (Pub. L. No. 97-60) increased the enlisted rates to \$83 a month in recognition of the fact that Hazardous Duty Incentive Pay rates had "not been adjusted in more than 20 years, and this increase is needed to enhance the incentive value of the pay."⁵

The number of personnel receiving Experimental Stress Duty Pay, and its annual costs, are shown in Table 1.

Table 1
Experimental Stress Duty Pay
Recipients and Costs

<u>Fiscal Year</u>	<u>Total Personnel</u>	<u>Cost (\$000)</u>	<u>Officers</u>	<u>Cost (\$000)</u>	<u>Enlisted</u>	<u>Cost (\$000)</u>
1972	969	\$748	162	\$214	807	\$534
1973	922	727	177	234	745	493
1974	943	760	217	280	726	480
1975	1,088	863	219	289	869	574
1976	1,125	894	229	302	896	592
1977	948	780	234	309	714	471
1978	931	771	237	313	694	458
1979	895	746	235	310	660	436
1980	894	749	241	318	653	431
1981	829	745	205	269	624	476

Fiscal Year 1982 Service breakouts appear in Table 2. Some Services keep combined figures, therefore, division by specific duty (i.e., acceleration/ deceleration, thermal, or pressure chamber) was not possible. Increased 1982 costs are the result of the increase in enlisted rates and a 1982 DOD Military Pay and Allowances Entitlements Manual change which allows rated physiologists to receive the pay for high/low pressure chamber duties.

Table 2
Experimental Stress Duty
FY82 Pay Recipients by Service

<u>Service</u>	<u>Number</u>	<u>Costs (\$000)</u>
Army		
Officer	1	1
Enlisted	37	37
Navy		
Officer	87	114
Enlisted	155	152
Air Force		
Officer	160	211
Enlisted	<u>432</u>	<u>345</u>
Total		
Officer	248	326
Enlisted	<u>624</u>	<u>534</u>
FY Total	872	860

IV. METHODOLOGY. Since Experimental Stress Duty Pay is categorized as a Hazardous Duty Incentive Pay, this analysis is aimed at determining if more than normal risk is involved and if the pay is assisting the Services in meeting their force management requirements.

With these factors in mind, the following questions were addressed during the review of this pay:

1. Is experimental stress duty sufficiently hazardous to warrant a special payment?
2. Are the Services experiencing problems with attracting and retaining sufficient volunteers for experimental stress duty?
3. Are the current rates appropriate?

V. ANALYSIS.

A. HAZARD ISSUE. Is experimental stress duty sufficiently hazardous to warrant a special payment? The three duties, which collectively comprise experimental stress duty, were the result of increased technological advances in military aviation and increased need for personnel to perform effectively under differing or unusual environmental conditions. The assignments for which a member is entitled to hazardous duty pay include (1) duty as a human acceleration or deceleration experimental subject, (2) duty as a human thermal experimental subject, or (3) duty inside a low (altitude) or high pressure (hyperbaric) chamber as a human test subject, research technician, or inside observer. Each of these positions has its own unique hazards. While many dangers are documented, the experimental nature of such work does not guarantee that unexpected or irreversible physical damage might not occur.

1. Acceleration/Deceleration. Assignments involving duty as a human acceleration or deceleration experimental subject consist of two types. First are those involving personnel who serve as test subjects on the human centrifuge. This consists of a suspended cab or gondola at the end of an arm which duplicates a circular path on a horizontal plane. As the cab is rotated around a vertical axis, centrifugal force is applied to the individual inside. Second are operations with the crash deceleration sleds and ejection seat towers. These experiments are conducted to determine the effect of high speeds and stoppages on humans, and to develop both protective harnesses and downward ejection seats for escape from high-speed aircraft. The forces exerted in these duties subject volunteers to considerable physical discomfort and health dangers, and, at times, possible loss of life.⁶

2. Thermal Stress. Personnel who perform duty as human thermal test subjects are exposed to uncomfortable and hazardous hours of temperature extremes. On occasion, the experiments are carried on to a point approaching the physical collapse of the subject. Tests may be conducted in temperatures ranging from minus 50°F to 350°F, and at altitudes of up

tor/observer and students; however, the Navy has recently recommended modification of its injury reporting system to do so.) Approximately 5% of all personnel exposed will experience decompression sickness. Depending upon severity, this may or may not preclude the individuals return to active duty. The Navy had no fatalities during this period.

Table 3
Navy FY82 Low Pressure Chamber Injuries

<u>TYPE</u>	<u>NUMBER*</u>
Barotitis Media	457
Barosinusitis	157
Aerodontalgia	13
Abdominal Trapped Gas Expansion	7
Altitude Decompression Sickness	21

* Approximately 70,000 exposures per year.

Table 4 represents major and serious accidents for all Air Force personnel receiving high/low pressure chamber flightsdives. A major accident is defined as a reaction that requires removal from the chamber. Any reaction that requires removal from the chamber and admission to the hospital is categorized as serious. Fluctuations in injuries are attributed by the Air Force to the increased/decreased number of exposures of assigned personnel. The Air Force experienced no duty related deaths during FY79-FY82.

Table 4
Air Force High/Low Pressure Chamber Accidents

<u>Category</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Major	191	329	267	292
Serious	32(3)*	33(6)	51(4)	42(13)

*()=instructor/inside observer; same breakout not available for major accident category.

Overall Air Force injury rates for experimental stress duty are shown in Table 5. While these rates include all categories, the predominant number of the injuries were the result of duty/exposure inside high/low pressure chambers.

Table 5
Air Force Injury Rates: Experimental Stress Duty/Exposure*
FY 1978 - FY 1982

<u>FY</u>	<u>Precluded Further Duty in Experimental Stress</u>	<u>Personnel Rendered Medically Unfit for Continued Active Duty</u>	<u>Temporarily Dis- abling Injuries not Precluding Return to Duty</u>
1978	.8%	0%	N/A%
1979	.4	.2	31
1980	1.2	0	50
1981	2.4	.18	39
1982	1.5	.96	41

* Breakouts by categories and by student or instructor/observer are not available.

The actual inquiry rate does not identify experimental stress duty as hazardous, rather, the potential for one of the many known or unknown injuries that could occur. It is difficult to ascertain what will happen or might happen after repeated exposures to the hazards in these duties. The very nature of human experimentation implies substantial risks even when conducted under closely monitored conditions. The potential dangers exist when personnel are repeatedly removed from their natural environment, to one which exposes them to cumulative effects which have not been fully delineated, establishes experimental stress duty as sufficiently hazardous to warrant a special payment.

B. ATTRACTION AND RETENTION. Are the Services experiencing problems with attracting and retaining sufficient volunteers for experimental stress duty? Currently, only the Army, Navy, and Air Force have personnel assigned to experimental stress duty. Generally, personnel who participate in the first two types of research, acceleration/deceleration or thermal stress experiments, do so on a voluntary basis for projects of limited duration. The majority of them are recruited separately and volunteer individually for each experiment. At the conclusion of the research, these personnel return to their normal duties and may or may not perform experimental work again. The Services have not reported a problem in obtaining volunteers for these two types of experimental stress duty.

In contrast, there is an on-going requirement for high and low pressure chamber personnel in the Army, Air Force and Navy. In fact, both officer (non-rated) and enlisted pressure chamber personnel will normally perform this function in the Air Force for a full career provided they remain medically and professionally qualified. It can also be a full-time career for officers in the Navy, while Army personnel generally perform duties for only 24 to 30 months. Unlike the other two types of Experimental Stress Duty Pay, retention becomes an additional element in reviewing the effectiveness of the pay for pressure chamber recipients.

Table 6 shows the Air Force authorized and assigned pressure chamber personnel for FY78-FY82. These figures do not include approximately 23 flying personnel or flight surgeons who may be assigned to such duty. The Air Force has experienced occasional problems with attracting sufficient enlisted volunteers for pressure chamber duties.

Table 6
Air Force Pressure Chamber Personnel
FY78 - FY82

FY	<u>Officer 9166 AFSC</u>		<u>Enlisted 911X0 AFSC</u>	
	<u>Authorized</u>	<u>Assigned</u>	<u>Authorized</u>	<u>Assigned</u>
78	67	67	398	403
79	57	61	394	373
80	58	63	403	422
81	60	61	420	423
82	65	67	417	394

Of particular concern, however, is the need for better retention for both officers and enlisted personnel because of educational entry requirements and the considerable service-unique training provided by the Air Force. Overall retention for officers during FY77-FY81 has been 63.3% for those with over 4 years of service and 54.8% for those with over 10 years of service. These compare to 85% and 95%, respectively, for all specialties of the Bio-Medical Services Corps (a related field) for the same period.

Enlisted retention rates appear in Table 7. With few exceptions, these compare unfavorably with overall Air Force reenlistment rates. Although first-term rates are approaching the overall rates, due to the nature of the work and the potential hazards involved, the Air Force would like to see even higher rates for these airmen.

Table 7
Air Force Enlisted Retention Rates (%)
FY78 - FY82

FY	<u>Experimental Stress Personnel</u>			<u>Overall Air Force</u>		
	<u>1st Term</u>	<u>2nd Term</u>	<u>Career</u>	<u>1st Term</u>	<u>2nd Term</u>	<u>Career</u>
78	23%	50%	58%	41%	60%	91%
79	25	50	68	38	60	91
80	29	78	55	36	63	92
81	33	85	70	43	72	94
82	54	64	67	57	81	95

The Navy reports that major difficulties associated with obtaining the required numbers of volunteers are the unknown long-range effects of continuous or prolonged exposure to conditions created during experimental stress duties. High and low pressure chamber authorizations and the number of Navy personnel receiving the pay are reflected in Table 8. Breakouts by type of chamber duty were not available.

Table 8
Navy High and Low Pressure Chamber Personnel
FY78 - FY82

FY	Officers		Enlisted	
	Authorized	Assigned*	Authorized	Assigned*
78	35	50	124	125
79	30	50	124	108
80	30	48	131	118
81	45	48	135	128
82	85	72	135	119

*Assignment data based on numbers receiving Experimental Stress Pay for chamber duties.

As for retention, Navy data are somewhat limited. Although specific assignment data were not available for high pressure chamber duty, commands having sizeable populations receiving the pay reported officer retention rates of about 92% and enlisted rates of 75%-80%. Twenty-eight officers are on orders for low pressure chamber duty, 50% of whom are from the U.S. Navy Reserve; the other 50% are career designated U.S. Navy. Enlisted retention rates for low pressure duty appear in Table 9.

Table 9
Navy Enlisted Retention Rates - Low Pressure Chamber
FY79 - FY83

Aerospace Physiology Technicians				Overall Navy		
FY	1st Term	2nd Term	Career	1st Term	2nd Term	Career
79	0 %	53.8%	100.0%	38.0%	45.0%	91.0%
80	23.1	70.0	100.0	37.0	51.0	92.0
81	75.0	66.7	87.5	42.0	57.0	94.0
82	44.4	83.3	100.0	50.0	63.0	95.0
83*	70.0	100.0	100.0	54.4	67.1	96.9
AVG	53.1	74.1	97.5	44.8	56.6	93.8

*Thru 5/83

The Army reports that they have experienced no manning or retention problems in experimental stress duty positions. Because of the small numbers involved, actual retention rates would not be statistically meaningful. Army personnel data are shown in Table 10.

Table 10
Army Experimental Stress Personnel
FY78 - FY82

FY	Officer		Enlisted	
	<u>Authorized</u>	<u>Assigned*</u>	<u>Authorized</u>	<u>Assigned*</u>
78	5	2	34	30
79	5	1	34	38
80	5	1	34	30
81	5	2	34	40
82	5	1	34	37

*Assigned numbers do not include aviation personnel who were assigned, but did not receive Experimental Stress Pay. Actual numbers of aviation personnel were not available, but Army reports all positions were filled.

C. RATES. Are the current Experimental Stress Hazardous Duty Incentive Pay rates appropriate? The purpose of Experimental Stress Duty Pay is to provide an incentive to participate in duties of an experimental nature, and to compensate somewhat for the actual risk involved in such duties. Current rates for experimental stress duty are, as with other Hazardous Duty Incentive Pays, \$110 per month for officers and \$83 per month for enlisted personnel.

Since the overall hazards are generally the same for all personnel assigned to experimental stress duties, it is appropriate to establish a single rate for Experimental Stress Duty Pay. To attempt to quantify differences in risk and incentive and provide compensation based thereon, is not feasible and would possibly create perceived inequities among personnel involved in these duties. Therefore, the enlisted rates should be increased to equal the existing officer rate of \$110 per month.

D. CIVILIAN INDUSTRY. The Federal Aviation Administration reported that it obtains the services of human test subjects from a contractor on an as-needed basis. The employment is part-time; minimum wage is usually paid. Personnel are compensated only for the time they are participating in the testing and receive no special additional compensation for experimental duties. Subjects are used in research involving the effects of drugs, alcohol, fatigue, aging, hypoxia, work schedules, and workload on aviation personnel. In addition, test subjects have been used to evaluate protective breathing devices and oxygen masks for aircrew and passengers.

At the National Aeronautics and Space Administration, astronauts who are Federal Civil Servants have duties involving high and low altitude chambers, thermal stress, weightlessness, or acceleration/deceleration testing. Such duties are considered normal job requirements. The astronauts do not receive a pay differential for such tests, since these are taken into consideration when determining the position's grade level. Unless experimental stress duties have been taken into consideration in determining the grade level of the job, other employees qualify for a differential of 25% of basic pay paid for all hours in pay status on the day the duty is performed.

E. FOREIGN NATIONS. Three foreign countries report a monetary incentive for experimental stress type pays.⁹ Table 11 represents Experimental Stress Duty Pay rates in foreign military services as of December 1980. (US \$ as of April 83)

Table 11
Experimental Stress Pay - Foreign Military Service

Canada:	C\$5/day (US \$4.00) Hypobaric Chamber Allowance C\$15-C\$35/day (US \$12-\$28) Experimental Saturation Dives
Germany (FDR):	DM45/month (US \$19.00) High Altitude Flight Tests DM150/month (US \$62.00) Flight Physiological Training Programs
United Kingdom:	3.0 pence per minute (US \$.04) (77-106 meters) to 5.1 pence per minute (US \$.08) (below 183 meters) Experimental Dives in Shore Establishments

VI. FINDINGS.

A. There is a need to provide special compensation to personnel performing duties involving acceleration/deceleration testing, thermal stress experiments, and high or low pressure chamber duty.

1. The Services are obtaining sufficient volunteers for acceleration/ deceleration and thermal stress duties, both of which are limited in duration.

2. Low attraction to pressure chamber duties contributes to undermanning in the Navy.

3. Retention rates of pressure chamber personnel in the Air Force and the Navy for both officers and enlisted personnel are below desired levels.

B. Current rates of payment are generally adequate to recognize the hazards and to provide a degree of incentive.

1. Officer and enlisted personnel should receive equal compensation for exposure to experimental-type duties.

2. An appropriate rate for both officer and enlisted personnel receiving Experimental Stress Duty Pay is \$110 per month.

VII. RECOMMENDATIONS.

A. Retain Experimental Stress Duty Pay for personnel performing duties involving acceleration/deceleration testing, thermal stress experiments, and high or low pressure chamber duty.

B. Amend title 37 U.S.C. 301(c)(1) to increase the enlisted rate to \$110 per month, eliminating the officer/enlisted pay differential.

References

1. Career Incentive Act of 1955, Senate Report No. 125 accompanying H.R. 5168, 84th Congress, 1st Session, p. 1850, March 28, 1955.
2. Military Personnel - Human Test Subjects - Incentive Pay, Senate Report No. 1002 accompanying H.R. 7914 85th congress, 1st Session, p. 1711, Aug 16, 1957.
3. Ibid, p. 1711.
4. Uniformed Services Pay Act of 1963, Senate Report No. 387 accompanying H.R. 5555, 88th Congress, 1st Session, p. 923, Aug 5, 1963.
5. Uniformed Services Pay and Benefits Act of 1981, Senate Report No. 97-146, accompanying S. 1181, 97th Congress, 1st Session, p. 9, 1981.
6. Op. cit., Career Incentive Act of 1955, pp. 1880-1851.
7. Ibid, pp. 1850-1851.
8. Bason, R., Pheeny H., and Dulley, F.E. Jr., Incentive of Decompression Sickness in Navy Low Pressure Chambers, Aviation Space and Environmental Medicine, p. 955 September 1976.
9. Preliminary Analysis of military Compensation Systems in the United States and Five Other Countries, Report by the US General Accounting Office, pp. 19-54, December 31, 1980.

Other Sources

Compensation Elements and Related Manpower Cost Items Their Purpose and Legislative Background, Military Compensation Background papers, Second Revised Edition, Office of the Secretary of Defense, July 1982.

SUMMARY OF RESPONSES

Experimental Stress Duty Pay

Issues:

1. There is a valid need to provide Experimental Stress Duty Pay.
2. Eliminate the officer and enlisted differential and establish a \$110 per month rate for Experimental Stress Pay for all ranks.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs with findings with exception of elimination of officer/enlisted differential. Proposes variable, by grade rates.
Air Force	Concurs with findings with exception of elimination of officer/enlisted differential.
Coast Guard	Defers to judgment of QPMC Staff
Public Health Service	Concurs.
NOAA	Defers to Services which utilize Experimental Stress Duty Pay.
JCS	Concurs.

LEGISLATIVE IMPLICATIONS

Experimental Stress Duty Pay

Amend 37 U.S.C. 301(c)(1) to reflect the increase in the enlisted rate by eliminating any reference to an enlisted rate and deleting the word "officer" in regard to the \$110 rate.

37 U.S.C. 301(a)(1) AND (2)
INCENTIVE PAY: HAZARDOUS DUTY INVOLVING FREQUENT AND
REGULAR PARTICIPATION IN AERIAL FLIGHT
AS AN ENLISTED CREWMEMBER OR NOT AS A
CREWMEMBER, RESPECTIVELY

**CREWMEMBER/NON-CREWMEMBER
FLIGHT PAY**

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CREWMEMBER AND NON-CREWMEMBER FLIGHT PAY

I. PURPOSE. To provide an incentive to Uniformed Services personnel for the frequent performance of hazardous duty required by orders involving aerial flight.

II. DATA SOURCES. The majority of data were provided by the Service Staffs of the Army, Air Force, Marine Corps, Navy, and Coast Guard. Although not a primary source of information, extensive field interviews were conducted at the following locations:

Andrews Air Force Base, MD
Coast Guard Air Station, Elizabeth City, NC
Dover Air Force Base, DE
Langley Air Force Base, VA
March Air Force Base, CA
Marine Corps Air Station, El Toro, CA
Naval Air Facility, Andrews Air Force Base, MD
Naval Air Station, Oceana, VA
Naval Air Station, Patuxent River, MD
USS Eisenhower (CVAN 69)
USS Kitty Hawk (CVA 63)

III. HISTORICAL PERSPECTIVE. Aviation Career Incentive Pay (ACIP); HDIP: Crewmember Flight Pay; HDIP: Non-crewmember Flight Pay; and HDIP: Air Weapons Control Officer (AWCO) Flight Pay have common origins. It was not until 1933 that the law differentiated between crewmembers (flying personnel) and non-crewmembers (non-flying personnel). The division by skill category was instituted with the establishment of ACIP forty years later. This created an incentive pay especially for aeronautically designated/rated officers while concurrently abolishing the officer crewmember flight pay structure. In 1981, a further delineation of Flight Pay occurred when AWCO pay was created. The following chronological listing of related legislation and recommendations of applicable pay commissions is grouped accordingly. Appendix A contains a complete discussion of the reasoning behind these actions.

A. FLIGHT PAY.

Public Law No. 62-401, 37 Stat. 707, March 2, 1913

- Army Officers
- detailed to fly heavier-than-air craft
- 35% of basic pay and allowances

Public Law No. 62-433, 37 Stat. 892, March 4, 1913

- Navy and Marine Corps officers
- same as above

Public Law No. 63-143, July 18, 1914

- Army only

- military aviators (O-3 and above) - 75%
- junior military aviators (O-3 and above) - 75%
- student aviators - 35%
- enlisted members - 50%

38 Stat. 939, March 3, 1915

- Navy and Marine Corps
- duty involving actual flying of "balloons, dirigibles and aeroplanes"
- based on percentage of basic and longevity pay:
 - fully qualified aviators - 50%
 - student aviators - 35%
 - enlisted members - 50%

Act of May 18, 1920, Chapter 190, Section II

- made pay and allowances of Naval officers applicable to Coast and Geodetic Survey Officers...NOAA Corps subsequently covered by 37 U.S.C.

Army Appropriation Act of June 4, 1920

- abolished aviator classes
- established 50% of base and longevity pay for both officer and enlisted members

Joint Service Pay Act of 1922 (Public Law 67-235)

- set uniform flying pay rates of 50% of base and longevity pay for all members of all the Armed Services branches
- type of aircraft not specified
- directed establishment of uniform entitlement standards

Executive Order (E.O.) 3705-B of July 1, 1922

- 10 flights per month, or
- at least 4 flight hours per month

Executive Order 4610 of March 10, 1927

- 10 flights must total at least 3 hours

Act of June 16, 1933 (Pub. Law 73-78, 48 Stat. 307)

- authorized President to distinguish between degrees of hazard (flying and non-flying) and adjust flight rates accordingly

B. HAZARDOUS DUTY INCENTIVE PAY: CREWMEMBER FLIGHT PAY.

1948 Advisory Commission on Service Pay (Hook Commission)

- introduced "incentive" as major element of Hazardous Duty Incentive Pays (HDIP)

Career Compensation Act of 1949 (Public Law No. 81-351)

- fixed pay structure based on pay grade
- highest amounts paid to "peak-usage" pay grades

1952 Commission on Incentive Hazardous Duty and Special Pays (Strauss Commission)

- recommended pay as percentage of basic pay to prevent depreciation of incentive value over time (not implemented in entirety but served as major impetus for Career Compensation Act of 1955)

1954 Appropriation Act

- exempted members with 20 years or more of aviation service from proficiency flying

Career Compensation Act of 1955

- increased rates set by Act of 1949
- introduced longevity step increments

1962 Appropriation Act

- extended excusal authority to aviators with 15 years or more aviation service, or remote assignments

1971 Appropriation Act

- extended flight pay to members in schools of ninety days or more who were prohibited from flying

1972 Appropriation Act

- restricted proficiency flying to members in anticipation of combat operation assignments
- authorized payment of flight pay to members assigned to non-flying jobs without regard to four hours per month rule

1973 Appropriation Act

- retained provisions of 1972 Act except: terminated entitlement for O-6 and above in non-flying positions after 31 May 1973, except for those serving in South East Asia.

Aviation Career Incentive Act of 1974

- eliminated officer crewmember flight pay authority under HDIP
- established Aviation Career Incentive Pay (ACIP) as separate entitlement

Uniformed Services Pay Act of 1981 (Pub. Law No. 97-60, 95 Stat. 992-994)

- created Air Weapons Control Officer Flight Pay
- increased Crewmember Flight Pay minimum to \$83 per month

C. HAZARDOUS DUTY INCENTIVE PAY: NON-CREWMEMBER FLIGHT PAY.

Navy Appropriation Act of March 15, 1934 (Pub. Law No. 73-422)

- capped Flight Pay at \$120 per month for "non-flying" Navy and Marine Corps Officers in grade of O-4 and above

Army Appropriation Act of April 26, 1934 (Pub. Law No. 73-176)

- placed same cap on Army "non-flying" officers

Navy Appropriations Act of June 25, 1935 (Pub. Law No. 74-163)

- extended \$120 monthly ceiling to non-flying Naval officers and "observers" regardless of grade

Military Appropriation Act of April 26, 1939 (Pub. Law 75-44)

- capped Flight Pay for flight surgeons at \$60 per month

Military Appropriation Act of June 13, 1940

- reduced the cap to \$60 per month for all non-flying officers

Career Compensation Act of 1949 (Pub. Law No. 81-351, 63 Stat. 802)

- established non-crewmember Flight Pay rates as follows:
 - officers: \$100/month
 - enlisted: \$50/month

Career Incentive Act of 1955 (Pub. Law No. 84-20, 69 Stat. 18)

- raised rates by 10% as follows:
 - officers: \$110/month
 - enlisted: \$55/month

Uniformed Services Pay Act of 1981 (Pub. Law No. 97-60, 95 Stat. 993)

- raised enlisted rates by 50% to \$83/month

IV. METHODOLOGY. The stated purpose of both Crewmember and Non-crewmember Flight Pay is to provide an additional incentive to personnel to enter upon and perform hazardous duty involving aerial flight. However, these pays targeted toward two distinct categories of individuals and are structured quite differently. Since, under current legislation, only enlisted members can qualify for Crewmember Flight Pay, the analysis of that pay emphasized enlisted crewmember inventory, authorizations, reenlistment behavior, and individual career fields based on the needs of their respective Services. The need for reestablishing officer crewmember pay authority, which was abolished upon enactment of the ACIP legislation, was also considered. Each pay was put to the following tests:

1. Validity of Purpose. Is an incentive pay necessary for the Services to attract and retain personnel in sufficient numbers and quality to meet their needs?

2. Credibility of Rates. Are the rates properly structured and set at the correct levels necessary to effect the desired behavior?

V. ANALYSIS.

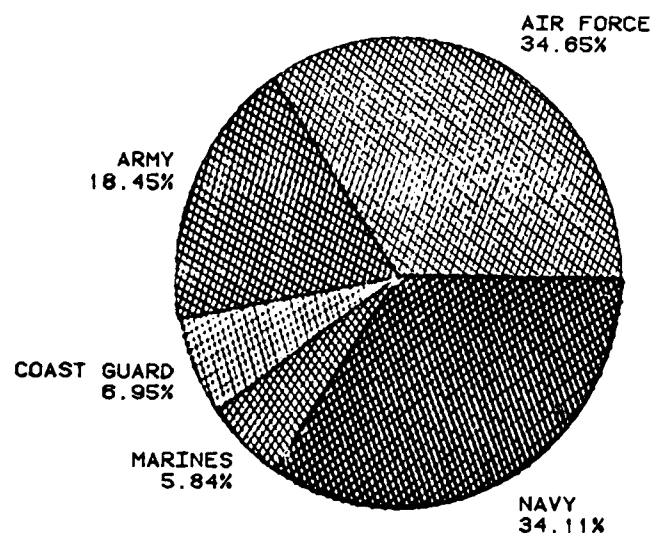
A. CREWMEMBER FLIGHT PAY.

1. Enlisted Crewmembers. Although the greatest number of enlisted crewmember authorizations occurs in the Air Force and Navy (Figure 1), this section analyzes the health and welfare of this general enlisted skill category, considering each of the Service's needs. It then addresses the current rates in terms of both level and structure to determine whether the pay meets these needs.

Figure 1

ENLISTED AIR CREWMEMBER AUTHORIZATIONS--1982

PERCENT OF TOTAL



a. Enlisted Manning and Reenlistment Behavior. For the purposes of this study, manning is defined as the percent of the authorizations which are being filled by individuals holding the qualifications specified by those authorizations. Reenlistment rates are the ratio of the number of people who reenlisted to the number who were eligible to reenlist.

(1) Air Force. Table 1 shows that air crewmember first-term reenlistment rates have been approximately 30 percentage points higher than the servicewide rates for the same group since FY79. In fact, as can be seen in Figure 2, they have actually equalled or bettered the service-wide second-term rates. The results of the same comparison for second-term and career reenlistment behaviors have been similar, though the differences have been less pronounced. This would suggest that the Air Force is experiencing no difficulty attracting and retaining enlisted crewmember personnel. However, a review of the rates by individual career field reveals that this relationship is not consistent. Pararescue Specialist (AFSC 115XX), commonly known as PJ, and Aerial Gunner (AFSC 111XX) second term reenlistment rates, for example, have often dropped well below even the service-wide rates.

Table 1
Air Force Air Crewmember Reenlistment Rates
(rounded to nearest percent)

CAREER FIELD	FIRST TERM					SECOND TERM					CAREER				
	FY78	FY79	FY80	FY81	FY82	FY78	FY79	FY80	FY81	FY82	FY78	FY79	FY80	FY81	FY82
Aerial Gunner	47%	69%	70%	65%	71%	60%	33%	52%	68%	84%	92%	95%	97%	92%	100%
Inflt Refueler	57	57	68	76	86	57	63	78	85	92	99	99	94	100	100
Flight Engineer	93	85	62	75	84	74	77	85	88	86	97	99	99	100	100
Loadmaster	52	60	75	74	83	59	82	74	81	93	96	96	95	100	98
Pararescue(PJ)	70	56	59	59	64	50	70	44	57	77	91	100	85	97	100
Airborne Comm	-	73	45	71	81	-	82	83	82	86	-	94	4	93	100
Overall CMER	60%	68%	69%	72%	81%	64%	75%	78%	83%	89%	96%	97%	96%	99%	100%
Service-Wide	41%	38%	36%	43%	57%	65%	60%	63%	72%	81%	92%	91%	92%	94%	95%

Figure 2

CREWMEMBER REENLISTMENT RATES AIR FORCE

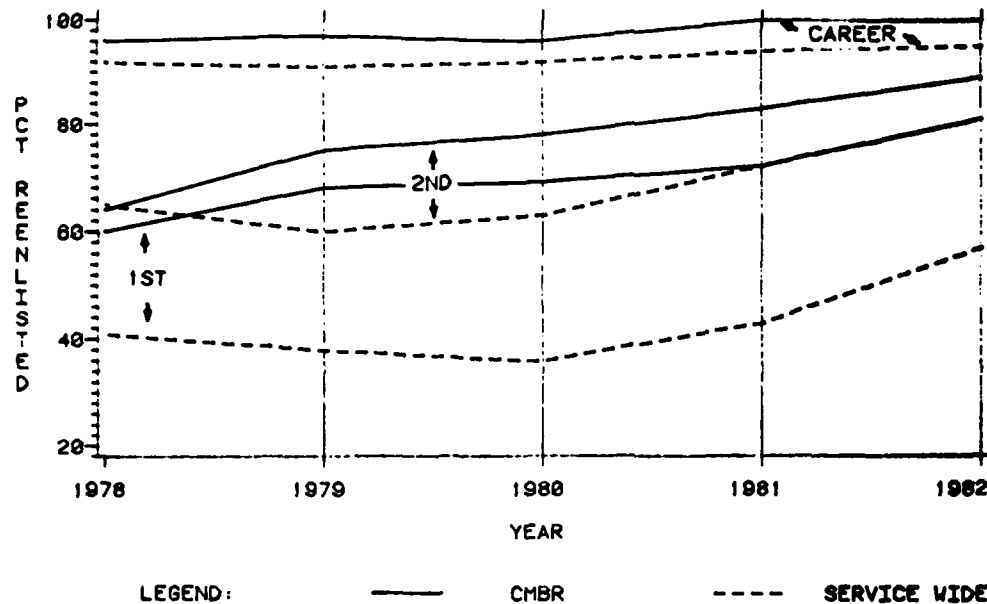


Figure 3 shows that Aerial Gunners are also experiencing manning shortfalls, though not severe, as are Airborne Communications Operations (AFSC 294XX) and Flight Engineers (AFSC 113XX). While the other crewmember skills are manned overall at 100%, they are all experiencing grade imbalances to some extent. In every case, the Air Force has overmanned certain paygrades to compensate for inventory shortfalls. While this procedure has ensured that the overall manning goal is generally achieved, the experience mix of the air crews is not in line with the service needs as defined by the authorization structure. Even if one aggregates the authorizations and inventory into three general skill levels, i.e., Semi-skilled, Skilled and Superintendent/Manager (Supt/Mgr), grade and experience manning imbalances continue to exist (Table 2).

Figure 3

AIR FORCE CMBR MANNING--1982

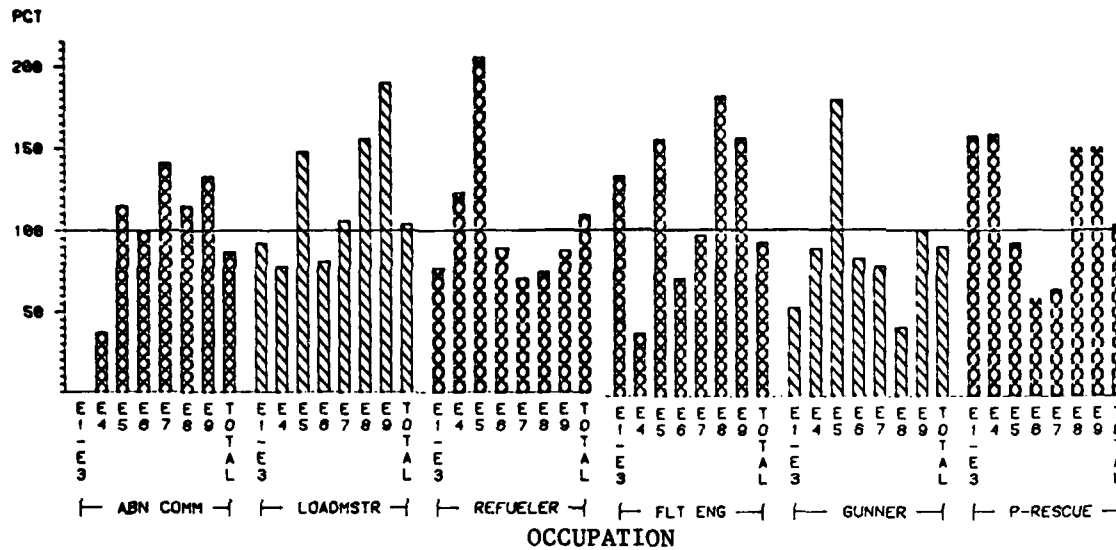


Table 2
Air Force Crewmember Manning - FY82
Aggregated by Skill Level

CAREER FIELD	Semi-Skilled (E-1 thru E-3)			Skilled (E-4 thru E-6)			Supt/Mgr (E-7 thru E-9)			Overall		
	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%
Aerial Gunner	94	179	53	410	356	115	90	128	70	594	663	90
Inflt Refueler	128	166	77	419	551	76	192	223	86	1039	945	110
Flight Engineer	28	21	133	1965	2292	86	874	770	114	2867	3083	93
Loadmaster	347	379	92	1598	1563	102	519	422	123	2464	2364	104
Pararescue(PJ)	74	47	157	213	220	97	42	52	81	329	319	103
Airborne Comm	38	0	-	347	492	71	125	93	134	510	585	87
Overall	709	792	90	4952	5474	90	1842	1688	109	7803	7959	98

(2) Navy. Unlike the Air Force, Navy enlisted air crewmembers, with the exception of Anti-Submarine Warfare Operators (ASW OPR, the AW rating) do not remain in flight status throughout their careers. Consequently, various crewmember skills, Navy Enlisted Code (NEC) 82XX, include a number of source ratings (career fields). Although NEC 82XX personnel are assigned to duties requiring their air crew specialty whenever possible, the sea/shore authorization structure as well as the timing of the individuals' transfers may preclude their assignment within their respective NECs [1]. Under these circumstances, they are assigned on the basis of their ratings alone. For these reasons, the reenlistment behavior of all but the ASW OPRs may be influenced equally by factors other than flight duty (Table 3). It should be noted that there are approximately 30 separate crewmember NECs resulting in very small numbers of individuals holding the same NEC eligible for reenlistment in any given year; therefore, the rates themselves can be greatly affected by the career decision of only a few individuals.

Table 3
Selected Navy Air Crewmember Reenlistment Rates
(rounded to nearest percent)

Rating	FIRST TERM				SECOND TERM				THIRD TERM			
	FY79	FY80	FY81	FY82	FY79	FY80	FY81	FY82	FY79	FY80	FY81	FY82
Antisub Warfare OPR	46%	40%	52%	57%	64%	71%	79%	90%	73%	75%	98%	96%
Utility Helo Crew	57*	40*	27	58	-	-	67*	80*	-	-	100*	-
Helicopter Rescue	40	24	46	33	60	41	67	60*	-	100*	100*	100
Vertical Replenish	33*	33*	50*	47	67*	50*	40*	100*	-	-	100*	100*
Utility Crewmen	35	25	47	31	46	40*	55*	100*	-	-	100*	100*
Flt Communications	67	56*	59	60	25	45	60	-	-	80	67*	100*
F3 Flt Engineer	-	100*	67*	-	30	72	80	83	75	-	100	100*
Elsec Warfare Intel	-	72	52	76	39	22*	53	-	-	-	100	86*
Average Crewmember	46%	49%	50%	52%	47%	49%	63%	86%	74%	85%	92%	97%
Navy-wide	38%	37%	42%	50%	45%	51%	57%	63%	91%	92%	94%	93%

Note:

- Only those skills having 10 or more enlistment eligibles in at least one cell displayed.
- No value given if cell contained less than 5 eligibles (-).
- '*' indicates cell contained at least 5 but less than 10 eligibles.

Figure 4 displays the relationship between ASW OPR reenlistment rates (the largest and only true crewmember career field) and the Navy-wide rates. Both first-term and second-term rates exceed those of their service cohorts. The cause of the reversal of this situation for the third-term (career) ASW OPR in FY79 and FY80 is not evident.

An examination of the FY82 manning levels of the various crewmember skills reveals that the Navy, too, is experiencing grade imbalances. Figure 5 represents the FY82 manning level of crewmember positions overall, ASW OPRs and the four NECs manned at less than 100%. It appears that the ASW OPR career field is a healthy, well-balanced community. However, this is not the case for the crewmember NECs and, therefore, crewmembers overall. The Navy has overmanned the senior

Figure 4

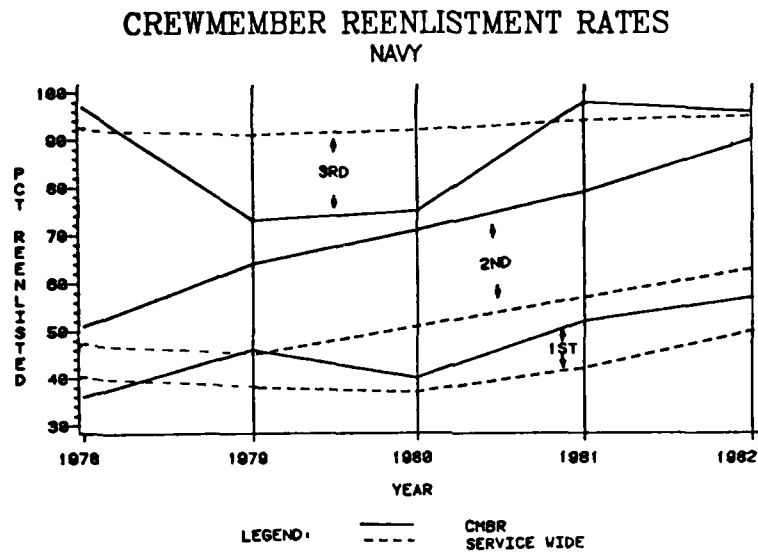
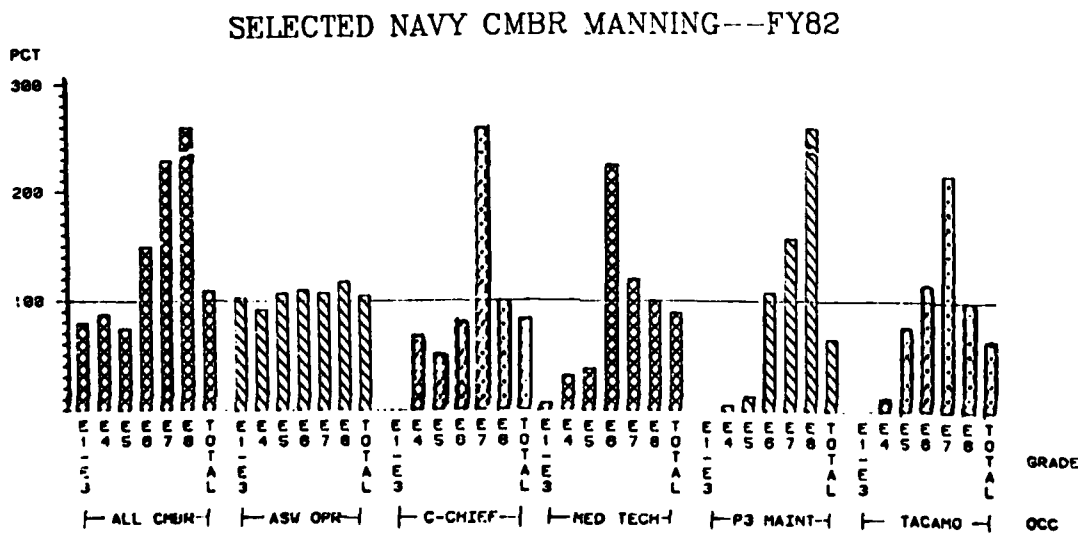


Figure 5



enlisted grades to compensate for junior grade shortfalls. Even this action, however, has failed to alleviate the manning problem for the Transport Crewchief, P3 Inflight Maintenance Technician, TACAMO Operator, and Medical Technician NECs.

(3) Army. As in the case of the Navy, Army air crewmembers do not remain in flight status throughout their careers. The reenlistment rates contained in Table 4 are for those specialties (MOSs) whose members can expect to have repetitive flight duty tours. Whether they are classified as crewmember, non-crewmember or ground crew depends on their actual assignments at any given time. Further, the majority of personnel who fly in these specialties are in grades E-5 and below; when promoted to E-6, most no longer fly as crewmembers [2]. This type of career pattern explains why overall crewmember reenlistment behavior, Figure 6, approximates that of the Army overall. Normally, during much of their careers, crewmembers are exposed to the same decisionmaking influences, both in terms of personnel and compensation policies, as other Army members.

Table 4
Army Air Crewmember Reenlistment Rates
(rounded to nearest percent)

SPECIALTY	FIRST TERM					CAREER				
	FY78	FY79	FY80	FY81	FY82	FY78	FY79	FY80	FY81	FY82
Airplane Repairer	39%	38%	50%	61%	42%	64%	73%	58%	66%	85%
Utility Helo Repairer	26	38	54	45	55	64	71	79	73	80
Tact Transp. Helo Repairer	-	-	30	32	50	-	-	100	79	88
Medium Helo Repairer	23	59	50	35	53	75	72	75	72	81
Overall Crewmember	26%	45%	52%	43%	54%	66%	71%	76%	72%	81%
Army-wide	36%	43%	51%	55%	58%	69%	66%	69%	73%	78%

An examination of the manning levels of these specialties by grade reveals that the grade imbalances identified in the other Services are repeated in the Army (Figure 7). Again, overmanning of some pay grades is required to overcome shortages in others.

Figure 6
CREWMEMBER REENLISTMENT RATES
ARMY

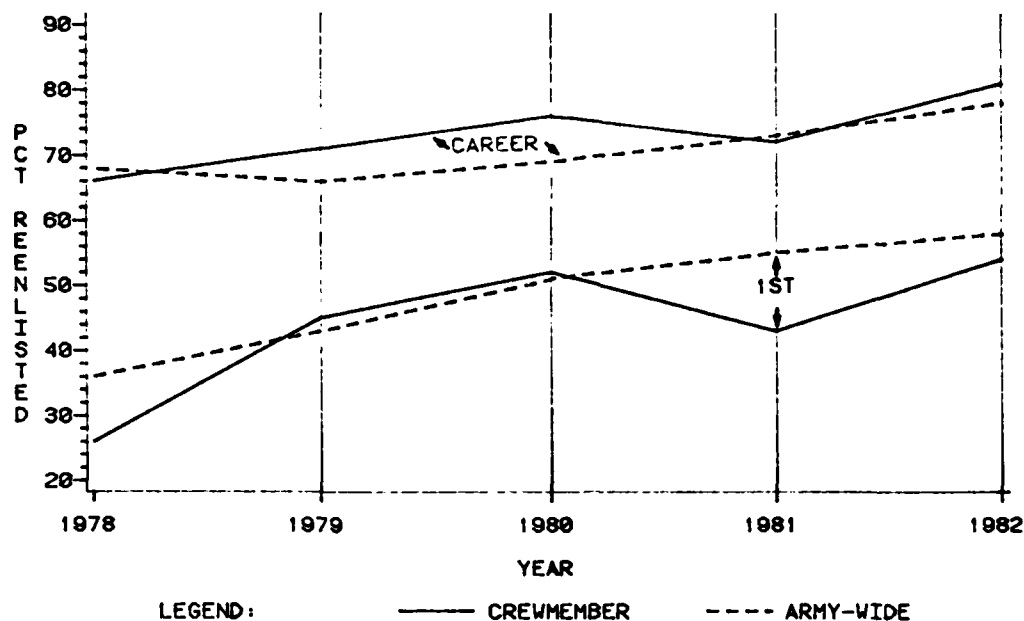
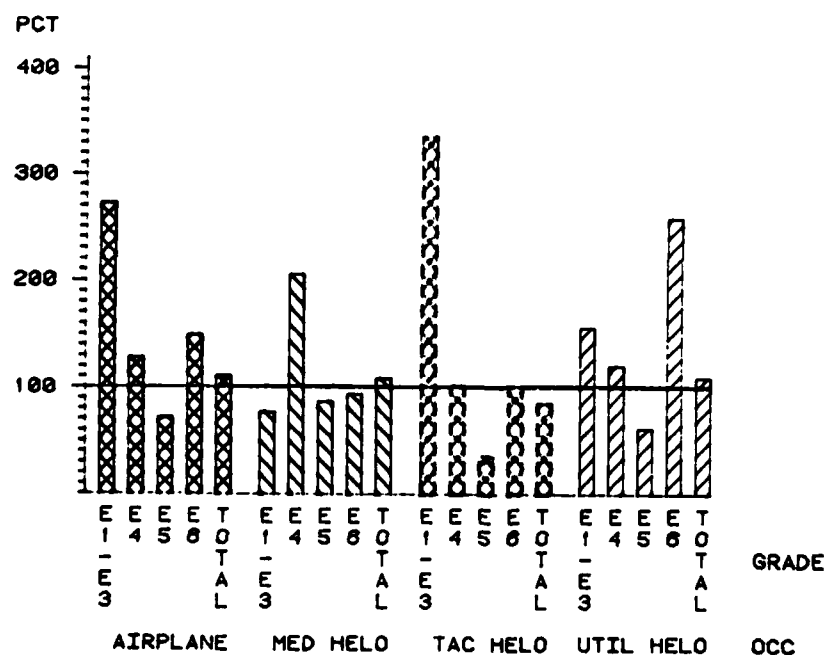


Figure 7
ARMY CMBR MANNING--1982



(4) Coast Guard. The aviation ratings listed in Table 5, are, in fact, career air crewmembers. Each of these aviation skills has enjoyed higher first-term reenlistment rates than those of the Coast Guard in general since FY78.

However, career reenlistment rates for Aviation Electrician's Mate (AE) were well below the service average until FY81 and did not exceed that rate until FY82. This somewhat explains the noticeable, though not severe, grade imbalance of AEs as compared to the other ratings (Figure 8). The E-9 Aviation Survivalmen manning shortfall is not considered serious since there are more than enough E-8's possessing experience roughly equivalent to that of E-9's to compensate for the shortage.

Table 5
Coast Guard Air Crewmember Reenlistment Rates
(rounded to nearest percent)

AVIATION RATING	FIRST TERM					CAREER				
	FY78	FY79	FY80	FY81	FY82	FY78	FY79	FY80	FY81	FY82
Machinist's Mate	34%	23%	35%	51%	54%	64%	68%	73%	91%	89
Electrician's Mate	39	20	26	67	41	55	54	59	86	91
Structural Mechanic	27	20	33	54	51	78	67	74	95	92
Survivalmen	32	19	33	56	76	78	75	33	90	84
Electronics Technician	25	18	22	47	34	68	65	76	87	94
Overall Crewmember	31%	20%	30%	55%	51%	68%	66%	63%	90%	90%
Coast Guard-Wide	18%	16%	27%	41%	36%	77%	65%	69%	88%	82%

Figure 9 exhibits the overall crewmember and the Coast Guard-wide reenlistment rates. Again, first-term rates are higher than the service average. However, career rates closely approximate those of their nonflying counterparts.

Figure 8

COAST GUARD AIR CMBR MANNING--FY82

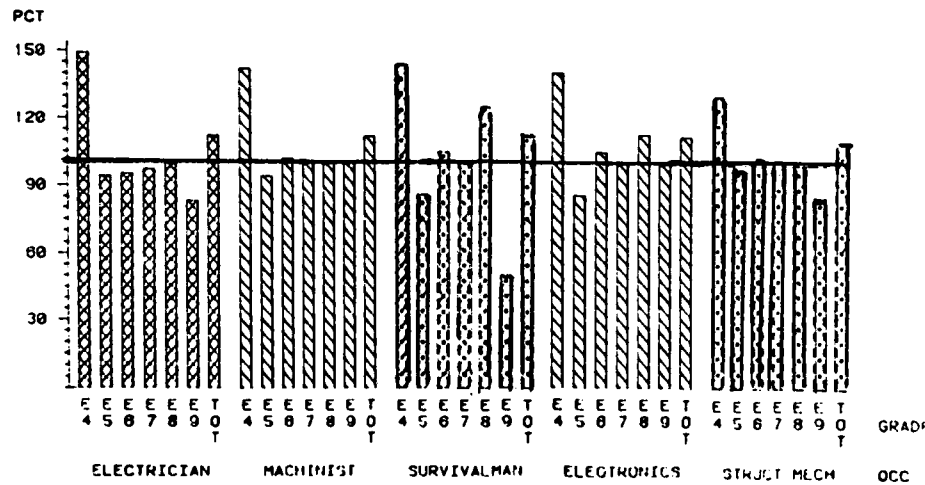
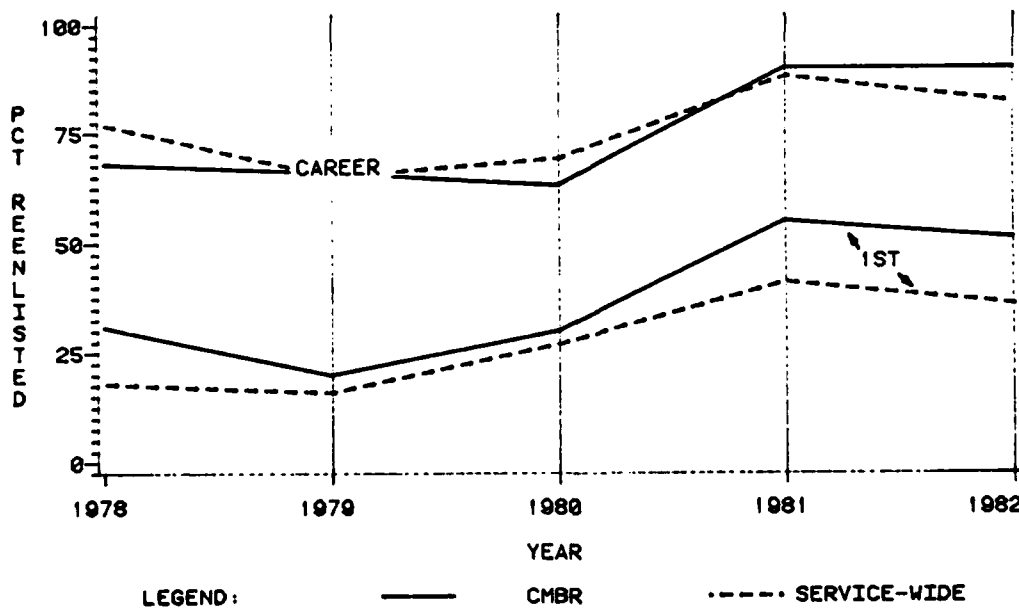


Figure 9

CREWMEMBER REENLISTMENT RATES COAST GUARD



(5) Marine Corps. The reenlistment behavior of Marine air crewmembers is very similar to that of the other Armed Service enlisted members. Table 6 contains these rates for FY80-FY82 for the three largest specialties which involve aerial flight on a career basis. While the Loadmasters have demonstrated particularly high rates throughout that time period, this is not true of the Navigators. The reenlistment behavior for this group, although generally favorable, is somewhat erratic, actually dropping below the Marine overall second-term rates in FY81 and FY82. Figure 10 shows that the highest rate of improvement overall occurred between FY80 and FY81. Average crewmember reenlistments have far exceeded the Marine Corps-wide rates; however, the differential diminished significantly between FY81 and FY82.

Table 6
Marine Corps Air Crewmember Reenlistment
(rounded to nearest percent)

Specialties	FIRST TERM			SECOND TERM			CAREER*		
	FY80	FY81	FY82	FY80	FY81	FY82	FY80	FY81	FY82
Flt. Engineer	22%	31%	45%	84%	81%	86%	100%	100%	100%
Navigator	25	38	35	82	67	72	100	100	100
Loadmaster	45	76	89	72	100	100	100	100	85
Average Crewmember	30%	49%	57%	80%	83%	86%	100%	100%	95%
Marine Corps	23%	27%	34%	50%	73%	75%	50%	75%	78%

*Believed artificially high due to manner in which lateral transfers were handled

Marine Corps air crewmember manning data, Figure 11, is also reminiscent of the other Services. Here, too, one may observe prominent overmanning in an effort to surmount grade-specific shortages. In the case of Flight Engineers and enlisted Navigators, these actions have not been entirely successful.

Figure 10
CREWMEMBER REENLISTMENT RATES
MARINE CORPS

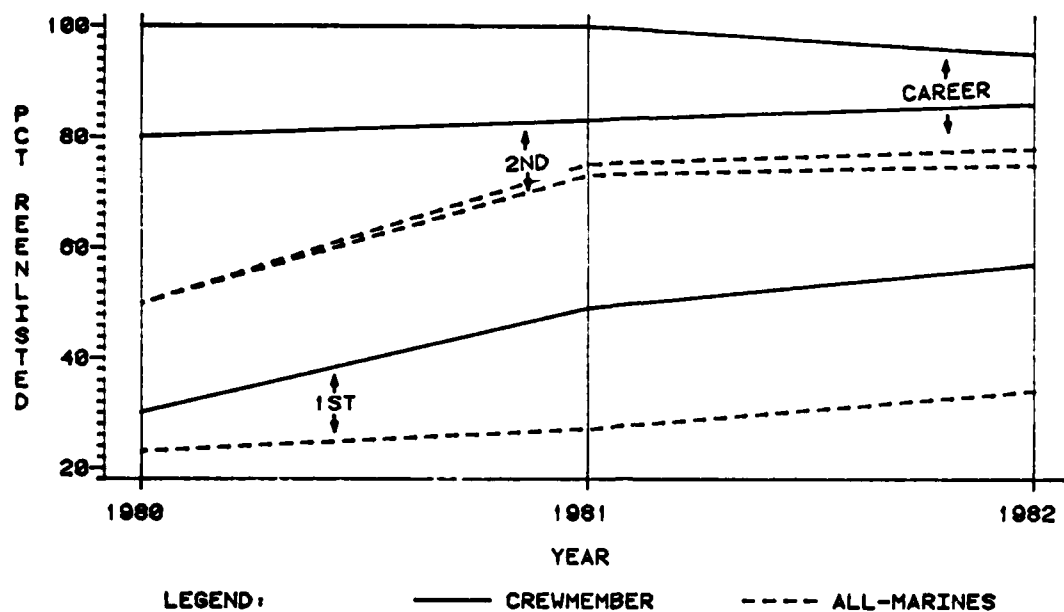
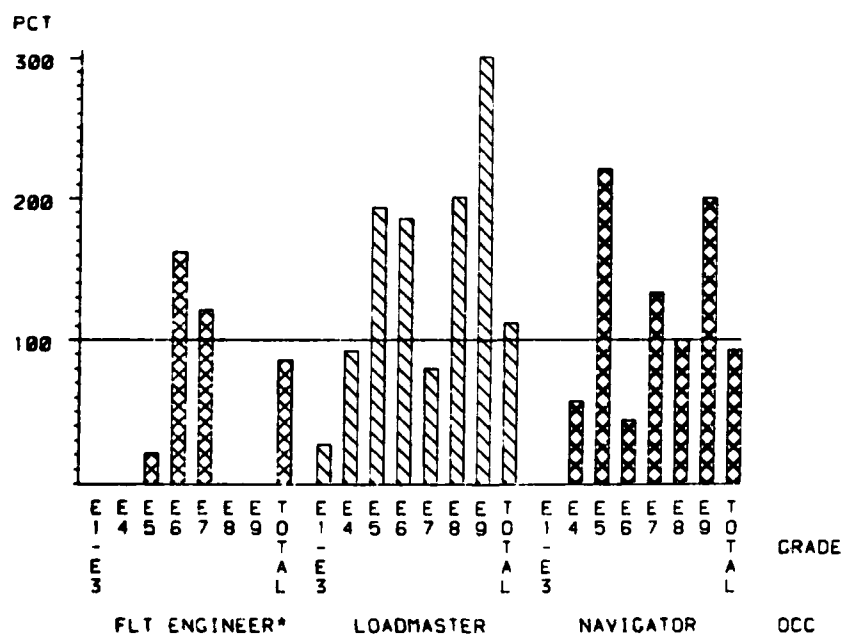


Figure 11

MARINE CORPS AIR CMBR MANNING--FY82



*No E1-E4 or E6-E9 authorizations

(6) Summary. The Services in general appear to be experiencing little or no difficulty in attracting or retaining crewmember personnel. Reenlistment rates of these individuals have demonstrated an upward trend since FY78. However, this was largely a recessionary period characterized by high unemployment and high inflation; therefore, the gains achieved by the Services cannot be wholly attributed to the recent increases in the overall compensation package. In nearly every case a reduction in the rate of improvement for reenlistment rates occurred between FY81 and FY82. This seems to imply some amelioration of the economic situation. Further, while crewmember manning overall is at or near 100%, grade imbalances, and therefore experience imbalances, continue to exist. In some crewmember skills these imbalances are quite severe.

b. Rates. The current enlisted crewmember rate structure, which varies by both grade and longevity, was established by the Career Compensation Act of 1955 in the belief that a direct relationship to basic pay offered a greater incentive. The pay levels for E-1 through E-3, E-4 with under four years of service and E-5 with less than two years of service were increased from \$63 to \$83 by the Uniformed Services Pay Act of 1981 (Pub. L. No. 97-60). The remaining levels were last adjusted by the Military Personnel and Compensation Amendments of 1980 (Pub. L. No. 96-343). For a detailed discussion of the evolution of this pay, see Appendix A.

The Service manning and reenlistment portion of this analysis has shown that, while reenlistment rates for air crewmembers are generally higher than those service-wide, grade imbalances and, in a few specific skills, overall manning shortfalls continue to exist. Can an adjustment to the Crewmember Flight Pay structure or rates serve to alleviate this situation?

Table 7 shows Crewmember Flight Pay in its present form. As can be seen, the rates range from \$83 to \$131 monthly, a difference of \$48 stratified by nine pay grades and 14 longevity steps, resulting in an average incremental increase of \$6. The incentive value of such an amount is questionable. Previous studies have shown, through the use of personal discount rates, that the greater the monetary incremental change provided (in these cases, lump sum bonus payments), the more likely an individual will exhibit the desired behavior [3,4]. In addition, as stated previously, incentive pay is most effective when related to basic pay. For example, while \$100 per month may serve as a strong incentive for an E-1 whose basic pay is \$573 per month, the incentive value of that same amount would be considerably less for an E-9 receiving \$1,881 in basic pay monthly.

Table 7
FY82 Crewmember Flight Pay

PAY GRADE	<u>Years of Service</u>													
	2 OR LESS	OVER 2	OVER 3	OVER 4	OVER 6	OVER 8	OVER 10	OVER 12	OVER 14	OVER 16	OVER 18	OVER 22	OVER 26	OVER 30
E-9	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131
E-8	131	131	131	131	131	131	131	131	131	131	131	131	131	131
E-7	100	106	106	106	113	119	131	131	131	131	131	131	131	131
E-6	88	94	94	100	106	113	119	119	125	125	125	125	125	125
E-5	83	88	88	100	100	106	113	119	119	119	119	119	119	119
E-4	83	83	83	88	94	100	100	100	100	100	100	100	100	100
E-3	83	83	83	83	83	83	83	83	83	83	83	83	83	83
E-2	83	83	83	83	83	83	83	83	83	83	83	83	83	83
E-1	83	83	83	83	83	83	83	83	83	83	83	83	83	83
E-1	83	83	83	83	83	83	83	83	83	83	83	83	83	83

Two actions can be taken to improve the incentive value of this pay: significantly increase the range of the allowable rates, or compress the pay table structure and increase the rates to a lesser degree. The first alternative is believed to be too costly and does not directly address the specific manning problems, that is, the grade imbalances. The latter, however, provides for greater incremental changes at lower program costs, since fewer steps are required. If the rates are differentiated by grade only, the incremental increase will appear greater than the actual dollar outlay by taking advantage of the pay raises coincidental to promotions. The scale cannot be compressed by longevity without losing this advantage.

The raising of the junior enlisted Flight Pay rates in FY81 without a commensurate increase for the middle and senior grades decreased the grade and longevity spread which was established upon its inception. At that time, the most senior enlisted crewmember drew 110% more Flight Pay than the most junior member. That differential has diminished to 58%. The incentive value of the pay has been eroded further by wage inflation. Table 8 proposes a new Crewmember Flight Pay structure which incorporates these concepts. The range was computed by reestablishing the original grade differential (\$83 - \$175) and then applying the Consumer Price Index (CPI) to reinstate the purchasing power afforded in 1980. The distribution across pay grade was determined initially by its relationship to basic pay and then tempered by the general crewmember authorization structures of the Services. That is, a higher concentration of these positions falls in the low-to-middle pay grades, therefore, a higher volunteer rate is necessary for these grades than for the senior enlisted grades, while a lesser incentive is required for E-7 through E-9 to meet the Service needs.

Table 8
Proposed Enlisted Crewmember Flight Pay Table
Comparisons with FY83 Basic Pay (BP)

Grade	Current		Proposed	
	Max	% Max BP	Rate	% Max BP
E-9	\$131	6%	\$200	9%
E-8	131	7	200	10
E-7	131	7	200	11
E-6	125	10	175	13
E-5	119	11	150	14
E-4	100	11	125	14
E-3	83	11	110	13
E-2	83	13	110	15
E-1	83	14	110	17

2. Officer Crewmembers. Most officer air crewmembers are either aeronautically designated/rated and, therefore, covered by ACIP, or are in the Air Force's Air Weapons Control Officer career field which was recently extended its own incentive pay (to be addressed separately). However, there are currently about 750 officers who by definition are crewmembers, but, due to the abolishment of officer crewmember pay authority in 1974, are being carried as non-crewmembers for pay purposes. Prior to the enactment of ACIP, rated and non-rated officer crewmembers received the same flight pay (up to \$245 per month). Officer Non-crewmember Flight Pay has been held at a flat rate of \$110 since 1955; consequently, it is not unusual for an enlisted member with equal or less experience to draw a higher incentive pay than an officer member of the same crew. For example, an E-6 flight engineer with 8 years of service (Basic Pay = \$1,102) is entitled to \$113 per month, while an O-4 flight nurse with 12 years of service (Basic Pay = \$2,434) earns only \$110 monthly. This situation is contrary to one of the basic principles of an incentive pay, that is, to be effective it must bear some relationship to basic pay. (See Appendix A for a detailed discussion of the legislative history of this pay.)

a. Manning. As can be seen in Figure 12, 85% of officer crewmember authorizations are found in the Air Force, hence, this analysis emphasized that Service's needs.

Officer non-rated crewmember positions are distributed across a wide range of skills; however, 94% of them can be aggregated into six general skill groupings: Communications, Intelligence, Missile Operations, Flight Nurse, Science and Engineering, and Weather. Figure 13 displays the FY82 manning levels of these skill groupings. All but the communications field are manned at less than 100%. In fact, it appears that scientists and engineers are seriously undermanned. (This,

Figure 12
OFFICER AIF CREWMEMBER
AUTHORIZATIONS - FY82
(Percent of Total)

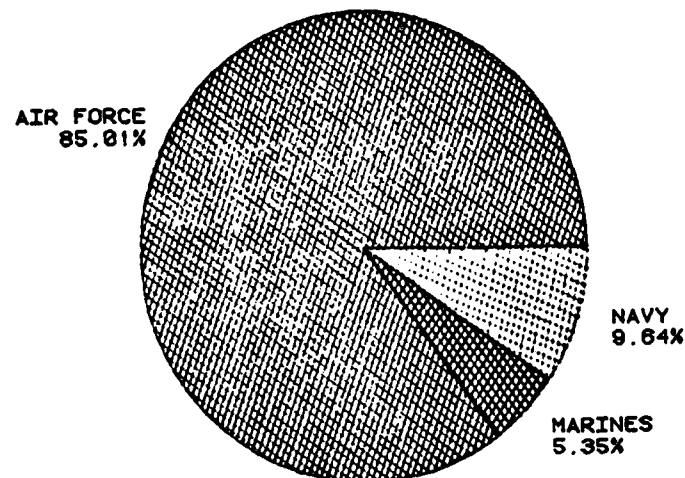
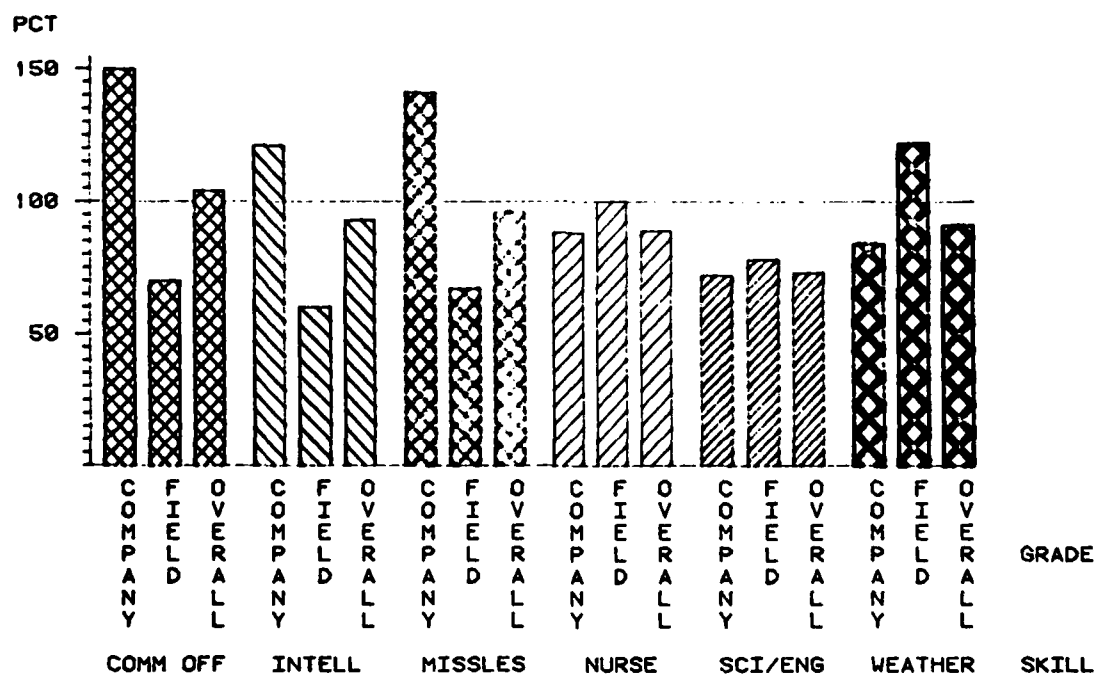


Figure 13
AIR FORCE OFFICER CMBR MANNING--1982



however, may be as much of a function of the fact that this skill in general is undermanned as the fact that these specific positions require aerial flight.) Further, the grade imbalances identified in the analysis of enlisted crewmembers are repeated for the officer corps. Since these officers can expect viable career opportunities on the ground and must be volunteers for flight duty, a need for a greater incentive than that currently being provided is indicated.

b. Rates. The basic reasoning and methodology employed to develop the proposed enlisted Crewmember Flight Pay rates were used for the officers. The major exception is that it was not assumed that the rate range (with CPI adjustments) as they existed upon the establishment of Crewmember Flight Pay in 1955 are still valid today. At that time, most of the officers in this category were pilots whose continuation behavior was considerably different from that of non-rated officers. Further, the need, as defined by the authorization structure, for this type of officer is considerably less than that for rated officers; therefore, smaller numbers are needed to be induced to volunteer. However, the same compression of the table and relationship to basic pay were applied. As in the case of the enlisted rates, some rounding was used to simplify application. It is intended that this scale apply to all officers not otherwise qualified for ACIP who are required by competent orders to perform as air crewmembers (e.g., airborne communications officers). Table 9 contains the proposed rates and a comparison of them to the maximum basic pay which can be drawn at each applicable grade level.

Table 9
Proposed Officer Crewmember
Flight Pay

<u>Grade</u>	<u>Proposed Rates</u>	<u>% Max Basic Pay</u>
O-7 and above	\$110	2%
O-5 and O-6	250	6-8
O-4	225	8
O-3	175	7
O-2	150	9
O-1	125	9
W-4	250	10
W-3	175	8
W-2	150	8
W-1	125	8

B. NON-CREWMEMBER FLIGHT PAY. The structure of an S&I pay is predicated upon the type and magnitude of the problem. For example, there are a number of duties that are hazardous in nature for which there are no hazardous duty pays as such. Additionally, the existence of a greater than normal exposure to hazard may be only one of several reasons that a special pay is necessary. Other common factors are: family separation, long working hours, strong private-sector draw, or simply distastefulness for the duty. The purpose of an incentive pay is not to compensate the individual for these stresses but to provide sufficient motivation for the individual to volunteer for the duty in spite of them.

Although non-crewmembers do not perform the operational mission of the aircraft but support it, they are not merely passengers. While their responsibilities are primarily on the ground, they may be assigned to positions which require them to accomplish a part of their tasks in the air. For example, a Communication Electronics Systems specialist may be required to perform a final check of a radio that he repaired in the aircraft; however, he does not normally fly with that aircraft but is assigned to a ground facility. Flying is incidental to his career. That is, a very small percentage of individuals in the same career fields as the recipient will be in flight status at any given time. If the particular skill is experiencing accession or manning problems, it is doubtful that the aerial flight aspects of the duties have an overwhelming effect on the member's career decisionmaking process. The dominant feature, therefore, is the occasional hazard associated with the duty.

It is agreed that one cannot be adequately compensated for loss of life or physical disability through a generalized pay system. Therefore, this pay is not intended to recompense the individual for the hazard as such. It is a recognition of the fact that those individuals when performing their tasks in the air are exposed to a somewhat greater risk than when they are performing the same or related tasks on the ground.

The inducement required for non-crewmembers is considerably less than that needed for the enlisted and non-rated officer crewmember and for the rated officer force. Therefore, it is believed that \$110 per month, which raises the current enlisted rate by \$27, is sufficiently high to recognize the hazard as well as to provide the incentive required for both officer and enlisted personnel.

C. COMMON ISSUES.

1. Hazards. It is a generally accepted belief that the potential hazards presented by frequent aerial flight are great. A review of Table 10, the number of aviation fatalities and major accidents which occurred from 1979 through 1982, supports that belief. It should be noted that these numbers do not include long-term disabilities or other serious

injuries known to result from these accidents. In addition, when asked to list the ten most hazardous officer and enlisted specialties based on Safety Center data between FY78 and FY82, each of the Armed Services consistently included the various aviation occupations.

Table 10
Armed Services Major Aviation Accidents
and Resultant Fatalities

<u>Calendar Year</u>	<u>Major Accidents</u>	<u>Resultant Fatalities</u>
1979	256	182
1980	246	211
1981	227	236
1982	215	287
TOTAL	944	916

2. Program Costs. In order to determine the costs of the proposed pay scales, one must examine the Crewmember and Non-crewmember programs concurrently. Enlisted noncrewmembers would experience a \$27 increase. At the same time, a number of officer authorizations would shift from the non-crewmember category to crewmember and the crewmember rates would slightly increase.

Table 11 shows the actual program costs from FY72 and FY82 expressed in 1982 dollars. The significant drop in costs in FY75 is coincident with the establishment of ACIP. Table 12 reflects the estimated program costs based on FY82 authorizations. As can be seen, non-crewmember costs are expected to be reduced slightly; however, total program costs (crewmember plus non-crewmember) would increase by about \$14.4 million. This cost is still \$3 million less than in FY75, the first fiscal year in which officer crewmember pay authority did not exist. In fact, the added cost of adopting the proposed officer crewmember rates (\$479,000) represents less than 1% of the new program costs.

Table 11
Historical Program Costs
(1982 dollars in thousands)

FY	Crewmember			Non-crewmember			PROGRAM TOTAL
	Officer	Enlisted	TOTAL	Officer	Enlisted	TOTAL	
72	\$650,693	\$91,639	\$742,332	\$3,803	\$13,553	\$17,356	\$759,688
73	511,873	72,343	584,216	2,635	10,226	12,861	597,077
74	410,450	55,340	465,790	1,864	7,290	9,154	474,944
75	-	47,381	47,381	2,942	6,332	9,274	56,655
76	-	40,564	40,564	2,425	5,432	7,857	48,421
77	-	36,139	36,139	2,166	4,348	6,514	42,653
78	-	34,007	34,007	2,264	4,244	6,508	40,515
79	-	31,174	31,174	2,164	3,726	5,890	37,064
80	-	28,328	28,328	2,256	3,403	5,659	33,987
81	-	31,729	31,729	2,212	3,205	5,417	37,146
82	-	29,897	29,897	3,006	5,158	8,164	38,061

Table 12
Estimated New Program Costs (\$000)
Based on FY82 Authorizations

	Crewmember	Non-crewmember	TOTAL
Enlisted	\$42,688	\$6,214	\$48,902
Officer	<u>1,662</u>	<u>1,823</u>	<u>3,485</u>
TOTAL	\$44,350	\$8,037	\$52,387

VI. FINDINGS.

A. CREWMEMBER FLIGHT PAY.

1. The Services require an air crewmember incentive pay to attract and retain volunteers in sufficient quantity and quality to meet their needs.

2. The current rates are too low and distributed across too many steps to provide an effective incentive.

3. Reestablishment of Officer Crewmember Flight Pay is warranted.

B. NON-CREWMEMBER FLIGHT PAY.

1. Sufficient potential hazard exists to warrant an additional pay for those personnel who participate in frequent aerial flight on a non-crewmember basis.

2. Although the need for an incentive exists to some extent, the dominant factor associated with non-crewmember duties is the hazard associated with performing tasks in the air rather than on the ground. Therefore, a flat rate of \$110 per month is sufficient to recognize the risk and serve as an incentive for this category of officer and enlisted flyers.

V. RECOMMENDATIONS.

A. Raise and compress the enlisted Crewmember Flight Pay rates as proposed in Table 8.

B. Reestablish the Officer Crewmember Flight Pay rates in accordance with the schedule contained in Table 9.

C. Raise enlisted Non-Crewmember Flight Pay to \$110 per month.

References

1. Department of the Navy, Chief of Naval Operations ltr Op-132C1:ESI: bcs dated 22 February, 1983.
2. Department of the Army, Office of the Deputy Chief of Staff for Personnel ltr DAPE-HRC-QRMC dated 16 February, 1983.
3. Cylike, Steven; Goldberg, Matthew; Hogan, Paul; Mairs, Lee; Estimation of Personnel Discount Rates: Evidence from Military Reenlistment Decision, Apr 1982.
4. Black, Matthew, Personal Discounts: Estimates for the Military Population, May 1983.

DETAILED HISTORICAL PERSPECTIVE

The practice of providing additional compensation for individuals participating in "aerial flight" has a long and rather involved history. In 1913 the role of military aviation was growing rapidly as were the number and variety of legislative packages introduced to recompense participants for the "exceedingly hazardous" nature of military flying. Unfortunately, there was no coordinated effort. Public Law No. 62-401, 37 Stat. 707, March 2, 1913, authorized an increase of 35% of the basic pay and allowances of Army officers actually detailed to fly heavier-than-air craft; however, pilots of other Services were not considered. Two days later, on March 4, 1913, Public Law No. 62-433, 37 Stat. 892 was enacted which extended the same pay differential to Navy and Marine Corps officers detailed to aviation duty. Both Acts limited the number of aviator authorizations to 30 officers per Service.

Each Service's flyers continued to be addressed in separate legislative actions. On July 18, 1914, Public Law No. 63-143 authorized the Army Signal Corps to increase its strength to allow for an aviation section comprised of 60 officers and 260 enlisted men. It further established two classes of aviators: "military aviators" (O-3 and above), who were awarded 75% of their basic and "length of service" pay for regular and frequent participation in aerial flight, and "junior military aviators" (O-2 and below), who were compensated at a rate of 50% of their basic and longevity pay. Student aviators received a 25% differential. This Act also extended Flight Pay to enlisted members for the first time. It was set at 50% of the individual's basic pay. Additionally, a gratuity equal to one year's basic pay was awarded to the widow of any aviator upon his death, if it occurred as a result of the performance of his flying duties.

Navy and Marine Corps officers continued to be paid at the old rates until the enactment of the Act of March 3, 1915 (Pub. Law 63-271, 38 Stat. 939). While this Act did incorporate the 50% enlisted differential, Navy and Marine Corps officers were not grouped in the same manner as those of the Army. Instead, Naval and Marine aviators, while duly ordered to duty involving actual flying of aircraft, "including balloons, dirigibles and aeroplanes," received 35% if students, while "Naval Aviators" (fully qualified aviators) were granted 50%. Authorizations were increased to 48 Naval officers and 96 enlisted and to 12 Marine Corps officers and 24 enlisted. It is interesting to note that this legislation precluded Navy O-5's or above and Marine Corps O-4's or above from drawing Flight Pay.

Between 1915 and 1922 a number of bills were passed which attempted to compensate flyers for the hazards associated with their duties. In 1916, the death gratuity program was expanded to include pensions. If a flyer died or was disabled, the "pension allowed" was double that authorized should the death or disability have not occurred as a result of an aviation accident. The Act of June 4, 1920, created the "Air Service" of the Army (later to be designated the Army Air Corps) and brought the

Flight Pay structure in line with that of the other Services by concurrently abolishing the aviator classification system and establishing a standard 50% rate for all officer and enlisted personnel. However, uniform Flight Pay rates were not formally established until the Joint Service Pay Act of 1922 (Public Law No. 67-235, 42 Stat. 625), which provided that, "all officers, warrant officers, and enlisted men of all branches of the Army, Navy, Marines Corps, and Coast Guard, when detailed to duty involving flying, shall receive the same increase of their pay... as now authorized for the performance of like duties in the Army." Additionally, the necessity of specifying uniform entitlement standards was addressed for the first time by this Act. The resultant Executive Order, E.O. 3705-B of July 1, 1922, directed that a member make 10 flights or be in the air at least four hours per month to qualify for Flight Pay. Executive Order 4610 of March 10, 1927 further specified that the 10 flights must total at least three hours.

The Great Depression motivated Congress to enact a number of innovative cost-saving measures. One, the Act of June 16, 1933 (Pub. Law No. 73-78, 48 Stat. 307), authorized the President to "...distinguish between degrees of hazards in various types of flying duty and make different rates of extra pay applicable thereto." Although no such action was taken at that time, the Navy Appropriation Act of March 15, 1934 (Publ. Law No. 73-422) and the Army Appropriation Act of April 26, 1934 (Pub. Law No. 73-176, 48 Stat. 618) placed a \$120 monthly ceiling on flight pay for "non-flying" officers of the grade of O-4 or above, thereby establishing Non-crewmember Flight Pay (though it was not called that at the time). Since this was roughly what the typical O-4 was receiving, the action had very little immediate impact. The grade qualifier was removed with the enactment of the Navy Appropriation Act of June 25, 1935 (Pub. Law No. 74-163) and the Army Appropriation Act of 1935. The rate was further reduced to \$60 per month for flight surgeons only (then classified as "non-flying officers") by the respective Army and Navy Appropriations Act of 1939. The Flight Pay for all other non-flying officers followed suit by FY41, Act of June 13, 1940 (Public Law 76-611, 54 Stat. 343). The accompanying House Appropriations Committee Report justified the reduction by stating, "The hazard (for non-flying officers) is certainly not as great as in the case of flying personnel who are in the air vastly more often and generally under more hazardous conditions." [1] Although the definitions of "flying" and "non-flying" officers changed from time to time, the two Flight Pays remained essentially the same until the findings of the 1948 Advisory Commission on Service Pay, more commonly known as the Hook Commission, which studied several of the Hazardous Duty Incentive Pays.

The Hook Commission first introduced the incentive aspect of the Hazardous Duty Incentive Pays (HDIP). It stated, in part, "Close examination of the nature of hazardous duty and their expressed or implied reasons for accepting risks indicated that incentive to engage and remain in hazardous occupations provided a more realistic and practical basis for determining the rates of special pay than the theory of recompense

for shorter career expectancy." [2]. The Commission further found that the differential offered is apparently most effective as an incentive compensation. "Experience and good sense dictates the need for a greater differential for individuals whose earnings are higher and thus have more to lose through death or disability. The differential should be adequate to attract and keep men in these pursuits at the grade and age at which they are most effective." [2] As a consequence of the Hook Commission recommendations, the Flight Pay rate schedule (displayed at Table 1), which indirectly tied Crewmember Flight Pay to basic compensation by establishing grade differentials and targeting the greatest incentive toward mid or "peak usage" officer grades, was incorporated into the Career Compensation Act of 1949 (Public Law No. 81-351, 63 Stat. 802). Noncrewmember Flight Pay was set at \$100 monthly for officers and \$50 per month for enlisted members.

Table 1
Hazardous Duty Incentive Pay
Crewmember Flight Pay (1949-1954)

<u>GRADE</u>	<u>\$/MONTH</u>	<u>GRADE</u>	<u>\$/MONTH</u>
O-8	\$150	W-1 Thru W-4	\$100.00
O-7	150	E-7	75.00
O-6	210	E-6	67.50
O-5	180	E-5	60.00
O-4	150	E-4	52.50
O-3	120	E-3	45.00
O-2	110	E-2	37.50
O-1	100	E-1	30.00

In October 1952 another study group was formed to examine all special and incentive pays. This group was called the Commission on Incentive Hazardous Duty and Special Pays and was later known as the Strauss Commission. On the subject of these pays in general, the Commission stated, "...increases in base pay and allowances, without corresponding increases in incentive pay, depreciate the incentive value of these pays." [3] In effect, they were recommending the abolishment of the fixed rate established by the Career Compensation Act of 1949 and institution, or probably more correctly, the reinstitution of the percentage-of-basic-pay system. While the then-new Eisenhower administration chose not to act upon the recommendations of the Strauss Commission, the report did play a role in the drafting of the Career Compensation Act of 1955 by reinforcing the concept that the purpose of HDIP was that of attraction and retention. This Act not only increased the Crewmember rates per grade set by the Act of 1949, but also introduced longevity step increments. The Senate Report justified this departure from the 1949 fixed-rate system in this manner: "This approach causes the amount of incentive

pay to vary not only between grades but within a particular grade based on years of service. The direct relationship of incentive pay and basic pay offers a greater incentive for retaining qualified air crew...members in hazardous duties".[4] While not a percentage system per se, the influence of the Strauss Commission reasoning is clear. The resultant rate structure, with the exception of the addition of grades O-10, O-9, E-9, and E-8 which were not established until 1958, remained in effect until the Aviation Career Incentive Act of 1974 (Table 2). This Act also increased the Non-crewmember rates by 10% to \$110 and \$55 for officers and enlisted, respectively.

The non-crewmember rates remained the same until October 1, 1981, when it was recognized that the enlisted rates for the flat-rate HDIPs in general had "not been adjusted in more than 20 years, and this increase is needed to enhance the incentive value of this pay." [5] Officer rates were not addressed. Crewmember Flight Pay, on the other hand, was continuing to change in both structure and rates.

In 1974, Congress established Aviation Career Incentive Pay by the Act of May 31, 1974 (Pub. Law No. 93-294, 88 Stat. 177), which abolished Crewmember Flight Pay for officers. However, the enlisted rates remained in effect until the Military Personnel and Compensation Amendments of 1980 (Pub. Law No. 96-343, 94 Stat. 1123) increased the rates by 25% across-the-board. The rates are the same as those currently in effect except for members in pay grades E-1 through E-3, E-4 with under four years of service, and E-5 with under two years of service (Table 3). These rates were increased to the current \$83 when it was realized the crewmembers in these pay grades were drawing less Flight Pay than were non-crewmembers. The correction of this perceived inequity was included in the Uniformed Services Pay Act of 1981 (Pub. Law No. 97-60, 95 Stat. 993).

Table 2
Hazardous Duty Incentive Pay - Crewmember Flight Pay (1955-73)
(Dollars per Month)

Years of Service

PAY GRADE	UNDER 2	OVER 2	OVER 3	OVER 4	OVER 6	OVER 8	OVER 10	OVER 12	OVER 14	OVER 16	OVER 18	OVER 22	OVER 26	OVER 30
O-10	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165
O-9	165	165	165	165	165	165	165	165	165	165	165	165	165	165
O-8	155	155	165	165	165	165	165	165	165	165	165	165	165	165
O-7	150	150	160	160	160	160	160	160	160	160	160	160	160	160
O-6	200	200	215	215	215	215	215	215	215	220	245	245	245	245
O-5	190	190	205	205	205	205	205	210	225	230	245	245	245	245
O-4	170	170	185	185	185	195	210	215	220	230	240	240	240	240
O-3	145	145	155	165	180	185	190	200	205	205	205	205	205	205
O-2	115	125	150	150	160	165	170	180	185	185	185	185	185	185
O-1	100	105	135	135	140	145	155	160	170	170	170	170	170	170
W-4	115	115	115	115	120	125	135	145	155	160	165	165	165	165
W-3	110	115	115	115	120	120	125	135	140	140	140	140	140	140
W-2	105	110	110	110	115	120	125	130	135	135	135	135	135	135
W-1	100	105	105	105	110	120	125	130	130	130	130	130	130	130
E-9	105	105	105	105	105	105	105	105	105	105	105	105	105	105
E-8	105	105	105	105	105	105	105	105	105	105	105	105	105	105
E-7	80	85	85	85	90	95	100	105	105	105	105	105	105	105
E-6	70	75	75	80	85	90	95	95	100	100	100	100	100	100
E-5	60	70	70	80	80	85	90	95	95	95	95	95	95	95
E-4	55	65	65	70	75	80	80	80	80	80	80	80	80	80
E-3	55	60	60	60	60	60	60	60	60	60	60	60	60	60
E-2	50	60	60	60	60	60	60	60	60	60	60	60	60	60
E-1	50	55	55	55	55	55	55	55	55	55	55	55	55	55
E-1*	50													

* Under 4 months and Aviation Cadets

Table 3
Current Crewmember Flight Pay
(Dollars per Month)

Years of Service

PAY GRADE	2 OR LESS	OVER 2	OVER 3	OVER 4	OVER 6	OVER 8	OVER 10	OVER 12	OVER 14	OVER 16	OVER 18	OVER 22	OVER 26	OVER 30
E-9	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131	\$131
E-8	131	131	131	131	131	131	131	131	131	131	131	131	131	131
E-7	100	106	106	106	113	119	131	131	131	131	131	131	131	131
E-6	88	94	94	100	106	113	119	119	125	125	125	125	125	125
E-5	83	88	88	100	100	106	113	119	119	119	119	119	119	119
E-4	83	83	83	88	94	100	100	100	100	100	100	100	100	100
E-3	83	83	83	83	83	83	83	83	83	83	83	83	83	83
E-2	83	83	83	83	83	83	83	83	83	83	83	83	83	83
E-1	83	83	83	83	83	83	83	83	83	83	83	83	83	83
E-1	83	83	83	83	83	83	83	83	83	83	83	83	83	83
Aviation cadets	83	83	83	83	83	83	83	83	83	83	83	83	83	83

References

1. House Report No. 1912, accompanying H.R. 9209, 76th Congress, 3rd Session.
2. Career Compensation for Uniformed Forces, "A Report and Recommendation for the Secretary of Defense by the Advisory Commission on Service Pay," December 1948.
3. Report of the Strauss Commission, "Differential Pays for the Armed Forces of the United States," Volume II, March 1953.
4. Senate Report No. 87-662, accompanying H.R. 87145, 87th Congress 1st Session.
5. Senate Report No. 97-146, accompanying S. 1181, 97th Congress, 1st Session.

SUMMARY OF RESPONSES

Crewmember/Non-crewmember Flight Pay

Issue:

A. Crewmember Flight Pay:

1. The Services require an air crewmember incentive pay to attract and retain volunteers in sufficient quantity and quality to meet their needs.

2. The current rates are too low and distributed across too many steps to provide an effective incentive.

3. Reestablishment of Officer Crewmember Flight Pay is warranted.

B. Non-crewmember Flight Pay:

1. Sufficient potential hazard exists to warrant an additional pay for those personnel who participate in frequent aerial flight on a non-crewmember basis.

2. The dominant factor associated with non-crewmember duties is the hazard associated with performing tasks in the air rather than on the ground, not the incentive aspect of the pay. Therefore, a flat rate of \$110 per month is sufficient to recognize the risk and serve as an incentive for this category of officer and enlisted flyers.

<u>Department</u>	<u>Comment</u>
Army	Concurs.
Navy	Concurs with all findings except B.2. stating, "... [Non-crewmembers] must be compensated in a manner that will provide an inducement for them to undertake their occasional flight duties. This can only be accomplished by providing a non-crewmember flight pay that is somewhat proportionate to their basic pay." A flat rate of \$150 for officers and \$110 for enlisted was proposed.

Department

Air Force

The Air Force strongly objects to the QRMCM recommendation to equalize officer and enlisted non-crewmember flight pay, Finding B.2. They, "consider it absolutely essential to preserve the incentive-based differential pay concept..." They further state, "In short, we have been unable to identify any problem that could be resolved by changing the law to re-categorize this non-crewmember incentive pay as hazardous."

Coast Guard

Concurs.

Public Health Service

Concurs.

NOAA

Concurs.

Joint Chiefs of Staff

Concurs.

LEGISLATIVE IMPLICATIONS

Crewmember/Noncrewmember Flight Pay

1. Amend 37 U.S.C. 301(b) to increase rates for enlisted crewmembers to maximum of \$200 based upon pay grade.
2. Amend 37 U.S.C. 301(b) to include officer crewmember pay authority to a maximum of \$250 depending upon pay grade.
3. Amend 37 U.S.C. 301(c)(1) to increase enlisted noncrewmember rate to \$110.

37 U.S.C. 301(a)(10)

INCENTIVE PAY: HAZARDOUS DUTY INVOLVING FREQUENT AND
REGULAR PARTICIPATION IN FLIGHT OPERATIONS
ON THE FLIGHT DECK OF AN AIRCRAFT CARRIER
OF A SHIP OTHER THAN AN AIRCRAFT CARRIER
FROM WHICH AIRCRAFT ARE LAUNCHED

FLIGHT DECK DUTY PAY

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FLIGHT DECK DUTY PAY

I. PURPOSE. To provide recognition for the performance of hazardous duty required by orders involving frequent and regular participation in flight operations on the flight deck of an aircraft carrier or of a ship other than an aircraft carrier from which aircraft are launched.

II. DATA SOURCES. The majority of the data were provided by the Service Staffs of the Navy and Marine Corps. Although not a primary source of information, extensive field interviews were conducted at the following locations:

Naval Air Station, Oceana, VA
USS Eisenhower
USS Kitty Hawk

III. HISTORICAL PERSPECTIVE. Flight Deck Duty Pay (FDDP) was created by the Act of August 28, 1965 (Pub. Law No. 89-149, 79 Stat. 585). It was passed in response to a Department of the Navy proposal which primarily expressed a concern for the exceedingly hazardous nature of the duty. The proposal stated in part,

...compilation of fatality and injury statistics shows that duty on the flight deck of an attack or antisubmarine aircraft carrier during flight operations is one of the most hazardous types of duty in the Navy. As to fatalities, it ranks next after duty involving flying. As to injuries, it ranks first by a wide margin. [1]

The Navy also addressed a number of "collateral reasons" for establishing FDDP, generally the contention that this pay would increase reenlistment rates of the aviation boatswain's mates (E-4) and non-rated personnel (E-3 and below) who comprise the largest portion of individuals performing flight deck duty and, thereby, reduce the number of injuries/fatalities and property damage attributable to inexperience.

The House Committee on Armed Services unanimously agreed that enactment of FDDP was completely justified, but expressed concern regarding the possibility that indiscriminate award of the entitlement was possible. Therefore, the Committee specified that the following minimum performance criteria be included in the departmental regulations implementing the legislation:

1. Only personnel assigned to billets requiring frequent and regular participation during flight operations as flight deck crewmen on the flight deck of an attack or antisubmarine carrier would be eligible for this pay.

2. Personnel will only qualify for this pay during the calendar months in which they serve in such billets and their parent carrier conducts a minimum number of flight operations.

3. A minimum monthly qualification for the parent carrier should be approximately 4 days of flight operations; or in the alternative, a minimum number of aircraft launches or recoveries as might be specified by the Secretary of the Navy.

4. Flight deck crewmen will not qualify for this pay during calendar months in which carriers are undergoing overhaul or otherwise do not conduct the minimum number of flight operations. Nor will flight deck crewmen qualify during those calendar months in which the units are conducting training operations ashore. [2]

Since FDDP was placed under the Hazardous Duty Incentive Pay (HDIP) umbrella, the officer/enlisted differential advocated by the Hook Commission (1948 Advisory Commission on Service Pay), by then \$110 and \$55 per month, respectively, was applied to this pay. It was the Hook Commission that first introduced the incentive aspect of HDIP stating, "Close examination of the nature of hazardous duty and their expressed or implied reasons for accepting risks indicated that incentive to engage and remain in hazardous occupations provided a more realistic and practical basis for determining the rate of special pay than the theory of recompense for shorter career expectancy." [3]

The implementing Executive Order 11157 of June 22, 1964, as amended at the time, restricted FDDP to flight deck crews operating aboard fixed-wing aircraft carriers. However, as time passed the role of helicopters in aviation warfare grew considerably; helicopter carriers were added to the fleet, and with the introduction of the Light Airborne Multipurpose System (LAMPS) program in 1971, the launch and recovery of helicopters aboard other than carriers became commonplace. However, it was not until the Uniformed Services Pay Act of 1981 (Pub. Law No. 97-60, 95 Stat 993) that the eligibility criteria was expanded to include that group of people. The accompanying Senate Report explained that the action was recognition of the "... extensive personal sacrifices made by military members ... whose routine duties involve hazardous working conditions." [4] That Act also increased the enlisted entitlement for all flat-rate HDIPs by 50% to \$83 per month. Officer rates were not addressed.

Executive Order 11157 of June 22, 1964, as amended, currently specifies that the minimum exposure for personnel performing flight deck duty on a full-time basis is 4 days or a minimum number of aircraft launches or recoveries, or both that is prescribed by the Secretary concerned as the equivalent participation. It further states that FDDP

may not be paid to any member for any month he is also eligible to receive incentive pay for other hazardous duty under 37 U.S.C 301. This latter provision was originally interpreted to mean that officers in receipt of Aviation Career Incentive Pay (ACIP) were precluded from receipt of FDDP. However, the DoD Military Pay and Allowances Entitlement Manual was changed in 1981 to allow for simultaneous payment of ACIP and HDIP. This change was based on the decision that, "... ACIP was to be considered a career incentive pay and not hazardous duty pay." [5]

Although governing legislation does not restrict FDDP authority to the Department of the Navy, of all the Uniformed Services, only the Navy and Marine Corps have implemented the pay.

IV. METHODOLOGY. There are two elements of FDDP: the hazard and the incentive. Each of these elements was put to the following tests:

1. Validity of Purpose. Are individuals who perform flight deck duty being exposed to a greater potential hazard than the typical service member? Is an incentive pay necessary for the Services to attract and retain sufficient numbers of volunteers to perform the duty?

2. Creditability of Rates. Are the rates properly structured and targeted to accomplish the purpose of the pay? Are they set at the appropriate level to effectively perform the function of FDDP?

V. ANALYSIS.

A. HAZARDS. The types of hazards to which flight deck personnel are exposed are perhaps best described in the House Report on the subject:

...[They] perform their duties under, around, and in close proximity of moving aircraft. They are exposed to hazards from jet intake, jet blasts, propeller wash, whirling propellers, flying objects detached from aircraft in faulty landings, aircraft crashes and fires, and accidents caused by breakage of faulty arresting gear. They must work at great speed, in winds of at least 30 miles per hour, and frequently in bad weather or darkness. [2]

There are 30-50 aircraft with idle exhaust danger zones of 40-50 feet and intake danger zones of 15 feet operating on a flight deck smaller in area than three football fields. This static hazard is multiplied by the dynamic working environment created by the constant movement of aircraft relocating to be launched recovered, refueled, re-armed and maintained. Individuals performing duties aboard the flight deck must be constantly aware not only of the status of their own aircraft but also of all others in their vicinity and of the life-threatening hazards posed by these aircraft.

Table 1 displays the number of on-the-job injuries/fatalities sustained by Navy personnel in FY78 through FY81 (FY82 statistics were incomplete) on flight deck duty and overall. It further expresses these numbers in terms of occurrences per thousand man-years performing the given duty. As can be seen, flight deck duty accident rates have been over three times that of the Navy overall for nearly that entire period.

Table 1
On-the-Job Serious Accident Rates

<u>While Performing Flight Deck Duty</u>			<u>Navy Overall</u>	
<u>FY</u>	<u>Injuries/ Fatalities</u>	<u>#per 1,000 Man-years</u>	<u>Injuries/ Fatalities</u>	<u>#per 1,000 Man-years</u>
78	73	10.2	2,881	5.1
79	112	14.9	2,616	4.7
80	101	14.2	2,051	3.7
81	117	13.9	2,221	3.9

B. INCENTIVE. Flight deck duty in itself is not a career field, nor is it necessarily voluntary. Although most Navy aviation ratings (occupations) will have repeated sea tours, there is no guarantee that members will ever operate on the flight deck. [6] This is also the case with the Marine Corps, where this duty is not considered a normal part of a Marine's career pattern within any occupational field. [7] Each ship, sea-going squadron, and detachment which utilizes flight deck billets is given a FDDP quota which, in turn, is distributed to the various divisions having personnel working on the flight deck. A person is then ordered in writing to a billet for a specific period of time, normally one month. Consequently, it appears that the concept of providing an incentive is not applicable to this pay. One need not provide a monetary inducement when an individual can be ordered to perform the duty. Additionally, if a particular skill is experiencing manning or accession problems, it is doubtful that the rather remote possibility of having to perform flight deck duty plays any role.

C. RATES. It is agreed that one cannot be adequately compensated for loss of life or physical disability through a generalized pay system. Therefore, in the cases where the duty is non-voluntary in nature, thereby negating the necessity for an artificial incentive, the purpose of a hazardous duty pay is to recognize that the individual is being exposed to a greater risk than is the average service member. Since all individuals on the flight deck during operations are being exposed to the same hazard, it follows that all such persons should receive the same "recognition pay," irrespective of grade. It is therefore proposed that a flat rate of \$110 per month, derived by applying the CPI (Consumer Price Index) to the current \$83 value paid to enlisted personnel and projecting to FY84, be paid to all qualifying personnel.

D. COSTS. Table 2 contains the actual and projected FDDP program costs based on the current payment schedule in 1982 dollars. The sudden increase in man-years beginning in FY82 (officers) and projected in FY83 (overall) can be attributed to the decision that officers in receipt of ACIP are not disqualified from concurrently receiving HDIP and the expansion of the eligibility criterion to include ships other than aircraft carriers. Adoption of the proposed \$110 flat rate would result in a projected program cost for FY84 of \$16 million dollars, an increase of approximately \$1.6 million.

Table 2
Flight Deck Duty Pay Program Costs
(1982 dollars in thousands)

FY	Man-years		Cost
	Officer	Enlisted	
72	292	7,901	\$12,891
73	369	8,998	13,812
74	324	7,702	10,575
75	307	7,643	9,719
76	307	7,520	8,542
77	280	6,727	7,654
78	250	6,850	7,096
79	270	7,200	6,647
80	270	6,819	5,612
81	275	8,112	8,863
82	443	9,613	10,159
83*	800	13,000	14,004
84*	850	13,300	14,369

*projected

VI. FINDINGS.

A. VALIDITY OF PURPOSE.

1. Flight Deck Duty presents a sufficient potential hazard to warrant a special pay.

2. Flight Deck Duty is non-voluntary in nature, therefore, the function of FDDP is to recognize that such duty is more hazardous than those assigned to the typical service member.

B. CREDITABILITY OF RATES.

1. Since the concept of an incentive pay is not believed applicable to this pay, an officer/enlisted differential is not considered valid.

2. The appropriate level of payment is \$110 per month, irrespective of grade.

VII. RECOMMENDATIONS.

- A. Eliminate the officer/enlisted differential.
- B. Set the FDDP rate at \$110 per month.

References

1. Department of the Navy, Office of the Secretary, ltr to Honorable John W. McCormack, Speaker of the House of Representatives, dated Jan 7, 1965.
2. House of Representatives Report, Incentive Pay for Performance of Hazardous Duty on Flight Deck of Aircraft Carrier, No. 171, accompanying H.R.3044, 89th Cong., 1st Session.
3. Career Compensation for Uniformed Services, "A Report and Recommendations for the Secretary of Defense by the Advisory Commission on Service Pay," December, 1948.
4. Senate Report No. 97-146, accompanying S.1181, 97th Congress, 1st Session.
5. Department of Defense, Deputy Assistant Secretary (Military Personnel and Force Management) ltr dated August 12, 1981.
6. Department of the Navy, Office of the Chief of Naval Operations memo 597F/32-83 dated 24 February 1983.
7. Department of the Navy, Headquarters United States Marine Corps, memo MPP-37A-msh 5000 dated 8 March 1983.

Summary of Responses

Flight Deck Duty Pay

- Issues: 1. The officer/enlisted differential should be eliminated.
2. The Flight Deck Duty Pay rate should be set at \$110 per month.

DEPARTMENT

COMMENTS

Army

Concurs.

Navy

Concurs.

Air Force

Defers to Department of Navy.

Coast Guard

Concurs. Further recommends that the term "Hazardous Duty Incentive" should be dropped inasmuch as "FDDP is to serve as a recognition of extra hazards, and that assignment to positions on flight decks is neither voluntary nor a career field in itself..."

Public Health Service

Concurs.

National Oceanic and
Atmospheric Administration

Defers to Armed Services.

Joint Chiefs of Staff

Concurs.

LEGISLATIVE IMPLICATION

Flight Deck Duty Pay

Amend 37 U.S.C. 301 (c) (1) to reflect the increase in the enlisted rate by eliminating any reference to an enlisted rate and deleting the word "officer" in regard to the \$110 rate.

37 U.S.C. 301(a)(3)
INCENTIVE PAY: HAZARDOUS DUTY INVOLVING FREQUENT AND
REGULAR PARTICIPATION IN GLIDER FLIGHTS

GLIDER DUTY PAY

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GLIDER DUTY PAY

I. PURPOSE. As with other hazardous duty incentive pays, Glider Duty Pay was established to attract personnel to service involving substantial danger. Its primary purpose is to persuade personnel to volunteer for and remain in duties involving the frequent and regular participation in glider flights. Since no funds have been expended for over 25 years, Glider Duty Pay is being examined to determine its continued need.

II. DATA SOURCES. Data were obtained from the Service Staff of the Army, Navy, and Air Force and selected historical reports and studies. The Marine Corps, Coast Guard, Public Health Service and NOAA have never used Glider Duty Pay.

III. HISTORICAL PERSPECTIVE. In enacting Glider Duty Pay (Act of July 1, 1944 (Pub.L. No. 78-409)) Congress' intent was to place the glider units, who were subject to comparable hazards of personnel currently receiving flight and parachute pays, on parity with the pay of the air forces and paratroopers of the other Services. Based on the existing flight pay (50% of basic pay), and parachute duty (\$100 for officers, \$50 enlisted), the act achieved "parity" by establishing rates at 50 percent of basic pay but not to exceed \$100 a month for officers and \$50 a month for enlisted members. In essence, the authorized amount provided for persons who participate regularly in aerial flight, but was limited to the parachute duty pay rates at that time.

The Career Compensation Act of 1949 (Pub.L. No. 81-351) continued the authorization for Glider Duty Pay and restated it as a hazardous duty incentive pay at the monthly rates of \$100 a month for officers and \$50 for enlisted personnel. Gliders went out of operational service in the early 1950's and the Strauss Commission of 1953 recommended the repeal of Glider Duty Pay,¹ but the pay authorized for such duty was never rescinded since the Services felt that unforeseen tactical requirements could again require its utilization. Along with other hazardous duty incentive pay rates listed in Title 37, United States Code, Glider Duty Pay was increased to \$110 and \$55 for officers and enlisted personnel, respectively, by the Career Incentive Act of 1955 (Pub.L. No. 84-20). The 1975 Third Quadrennial Review of Military Compensation recommended repeal of this pay because its established purpose was no longer valid.² Notwithstanding this action, Glider Duty Pay remained in the law. In recognition of the fact that the rates had "not been adjusted in more than 20 years, and this increase is needed to enhance the incentive value of this pay,"³ the hazardous duty pays were increased by the Uniformed Services Pay Act of 1981 (Pub.L. No. 97-60) to \$83 per month for enlisted personnel. Since Glider Duty Pay was carried in the same section of Title 37, it, too, was increased despite the fact that no one had drawn it in years. Gliders are presently in limited service at the United States Air Force Academy's airmanship program and at the Navy's Test Pilot school; however, no personnel have received Glider Duty Pay at these stations. The regulation governing administrative procedures was rescinded in 1955 and has never been replaced.

IV. METHODOLOGY. The fact that Glider Duty Pay has not been used in more than 25 years precludes an analysis of the type typically associated with a hazardous duty incentive pay. There are no data available to establish the incentive value of the pay since gliders have virtually been out of service since the 1950's. There must be a determination, then, of the need for such pay now or in future training or operational scenarios. With these factors in mind, the appropriateness of Glider Duty Pay was addressed.

V. ANALYSIS. The Army has no gliders in its inventory and has no future plans for their use that would be applicable to either a training or operational scenario. The Navy, on the other hand, uses gliders as part of the Naval Test Pilot syllabus. This program, established in the mid 1960's, consists of approximately 7 flights and 2 hours total glider flight time. In the past, individuals performing duty in these gliders have received Aviation Career Incentive Pay (ACIP) since they are career aviators.

Although there are no gliders in operational units, the Air Force introduced gliders in 1968 in support of the Air Force Academy Soaring/Airmanship programs. Fourteen active duty officers and one active duty enlisted individual are assigned to duty in the program. All officers receive ACIP and the enlisted individual receives crewmember flight pay. These personnel fly approximately 2 hours per week, with the exception of the enlisted individual who gives FAA examinations for the program, flying 2 to 5 hours a week. The Academy is authorized to fill up to four soaring positions with non-rated officers. It is expanding its soaring program during 1983 to include powered sail planes.

Title 37 United States Code provides for payment of non-aviator rated personnel involved in frequent and regular participation in aerial flight as an enlisted crewmember or non-crewmember. In addition, the Code provides for flight involving participation in gliders. These entitlements are subject to regulations prescribed by the President. Executive order 11157, as amended, has defined aerial flight, as "flight in an aircraft, glider, or spacecraft."⁴ Therefore, a separate provision for glider duty pay is unnecessary. The Department of Defense, Office of the General Counsel agrees and has stated, "provided that all other provisions and requirements pertaining to entitlement under clauses (1) or (2) are satisfied, members performing glider flights are entitled to hazardous duty incentive pay under those clauses."⁵

VI. FINDINGS.

1. Gliders have not been in use since the 1950's with the exception of limited use in training scenarios.
2. There are no current operational scenarios for future glider flights.
3. No personnel have received Glider Duty Pay since the 1950's.

4. Non-aviator rated personnel could be assigned to duties involving glider flights; however, this has occurred only once in the past 25 years.

5. Personnel involved in glider duty are authorized enlisted Crewmember or Non-crewmember Hazardous Duty Incentive Pay in Title 37, United States Code, clause (1) and (2) of section 301(a).

6. The provision for Glider Duty Pay in Title 37, United States Code 301(a)(3) should be repealed.

VII. RECOMMENDATION. Repeal provision 301(a)(3) of Title 37, United States Code referring to duty in gliders.

References

1. Report of the Strauss Commission, "Differential Pays for the Armed Forces of the United States", Report of the Commission on Incentive-Hazardous Duty and Special, Volume I, page 31, March 1953.
2. Report and Staff Studies of the Third Quadrennial Review of Military Compensation; Military Compensation: A Modernized System, Draft Final Report (Long Version), page 75, 1976.
3. Senate Report No. 97-146, p.8, accompanying S.11811 97th Congress, 1st Session.
4. United States Code Annotated, Title 37 Pay and Allowances of the Uniformed Services, Executive Order No. 11157, page 81, 1981.
5. Office of the General Council Letter to Chairman, Special and Incentive Pays, 5th QRCM, Subject: Hazardous Duty Incentive Pay for Glider Flights, Washington, D.C. April 28, 1983.

Other Sources

Compensation Elements and Related Manpower Cost Stems their Purpose and Legislative Background, Military Compensation Background paper, Second Revised Edition, Office of the Secretary of Defense, July 1982.

SUMMARY OF RESPONSES

Glider Duty Pay

Issue: Elimination of provision for Glider Duty Pay. Payment for glider duty is authorized under other flight incentive or hazardous duty pays.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Interposes no objection.
Air Force	Concurs.
Coast Guard	Concurs.
Public Health Service	Concurs.
NOAA	Concurs.
JCS	Concurs.

LEGISLATIVE IMPLICATIONS

Glider Duty Pay

Repeal 37 U.S.C. 301(a)(3) containing reference to duty in gliders.

37 U.S.C. 301(a)(5)
INCENTIVE PAY: HAZARDOUS DUTY INVOLVING CONTACT WITH
PERSONS AFFLICTED WITH LEPROSY

LEPROSARIUM DUTY PAY

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LEPROSARIUM DUTY PAY

I. PURPOSE. To provide an incentive for personnel to volunteer for hazardous duty involving intimate contact with persons afflicted with leprosy (Hansen's Disease).

II. DATA SOURCES. The majority of data was obtained from the Service Staffs of the Army, Navy, Air Force, Marine Corps, and Coast Guard and the Public Health Service (PHS). Background information was provided by the Hansen's Disease Clinic, Mary's Help Hospital, San Francisco and the American Medical Association. Published Hansen's Disease studies and interviews conducted with recognized authorities as reported in various periodicals and professional journals served as supplemental data sources.

III. HISTORICAL PERSPECTIVE. Although Leprosarium Duty Pay (LDP) has existed in one form or another since the early 1900's, it was not included under the Hazardous Duty Incentive Pay (HDIP) umbrella until the passage of the Career Compensation Act of 1949 (Public Law No. 81-351, 63 Stat. 802). This Act, which extended LDP for the first time to other than just Public Health Service personnel, was passed largely in response to the recommendations of the 1948 Advisory Commission on Service Pay, commonly known as the Hook Commission. It was this commission that first introduced the incentive element of HDIP. It stated in part, "Close examination of the nature of hazardous duty and the expressed or implied reasons for accepting risks indicated that the incentive to engage and remain in hazardous occupations provided a more realistic and practical basis for determining the rates of special pay than the theory of recompense for shorter career expectancy."

HDIP rates were fixed at \$100 a month for officers and \$50 a month for enlisted personnel, approximately 25% of basic pay of the typical recipient upon its inception in 1949. These rates were raised to \$110 for officers and \$55 for enlisted members by the Career Incentive Act of 1955 (Public Law No. 84-20, 60 Stat. 18) and remained in effect for over twenty years. During 1981, in recognition of the deterioration of the incentive value of the rates (then only approximately 5% of the recipients' basic pay), enlisted HDIP rates were increased by 50% to \$83 per month. This increase had no effect on leprosaria staffing since, by policy, enlisted personnel are not assigned Hansen's Disease patient-care duties.

Executive Order 11157, which implements the Career Incentive Acts, defines the term "duty involving intimate contact with persons afflicted with leprosy" to mean duty performed by a member of the Uniformed Services assigned to a "leprosarium" for a period of 30 days or more. The only federal leprosarium currently in existence, the National Hansen's Disease Center in Carville, LA, is operated and staffed by the Public Health Service. This situation has existed since the 1960's when the Tinian Leprosarium was transferred to the Department of the Interior and the Navy medical officer billet there was disestablished. Hawaii assumed charge of the only other federal leprosarium in 1942. Consequently, members of the PHS are and have been the primary recipients.

The Department of Health and Human Services, upon recommendation of the PHS, included in the draft versions of the 1981, 1982 and 1983 Health Amendments Acts submitted to the Speaker of the House of Representatives proposals to repeal the LDP authority of 37 U.S.C. 301. However, the LDP pay provisions were not addressed in associated testimony of subsequent legislative actions.

IV. METHODOLOGY. As discussed earlier, there are two elements of this pay: (1) to recompense an individual for the hazardous nature of the duty itself, and (2) to serve as an incentive to engage and remain in these duties. The following tests were applied to each element to determine the appropriateness of LPD:

A. Validity of purpose. For example, does a significant hazard actually exist? Are the Services experiencing difficulty in attracting and retaining volunteers for the duty?

B. Creditability of rates. If indeed a significant hazard does exist, are the rates currently in use set at the minimum levels necessary to effect the desired behavior?

V. ANALYSIS.

A. HAZARD ELEMENT.

1. Validity of Purpose. Are the attending staff members actually being exposed to an unusual risk? Despite a long history of recognition and study, leprosy remains the least understood of all the major infectious diseases. Its mode of transmission and degree of communicability are still unclear. A study conducted in 1973 showed that 88% of health personnel working in a leprosarium for over one year were infected by the disease.[1] However, while this and other studies indicate that the disease is highly infectious, they also report that the infection, which in most cases can be detected only as a result of specific testing, has low incidence of actually developing into the active disease. A study of 240 cases of Hansen's Disease cases that were known to have occurred among veterans serving between 1940 and 1968 showed that only 46 developed as a result of exposure while in the Service.[2] While this is a very small percent of the total veteran population, it does demonstrate that military personnel can develop the disease upon exposure even if that exposure occurs only incidentally. The implication is that where the exposure is more than incidental, as at Carville, the risk is probably greater than that for the general populace. On the other hand, the predominance of evidence indicates that a considerable portion of leprosy cases have no discernable history of "contact" with other cases.[3] A study in southern India, where the prevalence of the disease is highest, showed that leprosaria workers displayed a lower incidence of active Hansen's Disease than well-matched control groups not working in this environment.[4] Further, RADM John R. Trautman, Assistant Surgeon General, Public Health Service and Director of the National Hansen's Disease

Center, indicates that, while the bodies of a large percentage of the Carville staff have probably been infiltrated by the Hansen's Disease bacillus, no staff member in the past 25 years, to his knowledge, has contracted the clinically active disease.[5] Finally, although the reported cases of leprosy have risen almost 500% since 1960[6], this increase is attributable to imported cases rather than indigenous transmission. For example, of the 91 cases reported in California in 1980, only one was a member of the U.S. natural-born population.[7]

2. Creditability of Rates. Are the LDP rates set at the appropriate levels to compensate the individual for the added risk of performing such duty? Medical officers of all the uniformed services are routinely exposed to highly infectious diseases, including Hansen's Disease, outside of the carefully controlled leprosarium environment. For example, the Centers for Disease Control (CDC) operate a program for epidemiological training. The officers in the program, known as the Epidemic Intelligence Service, travel to various areas worldwide when disease outbreaks occur. Such duty may expose the officers to highly contagious and sometimes previously unknown diseases. Yet, they are not eligible for any form of HDIP. Consequently, any level of compensation greater than that afforded these individuals who are being exposed to an equal or greater hazard than leprosaria staff members would appear to be inappropriate.

B. INCENTIVE ELEMENT.

1. Validity of Purpose. Are the services experiencing any manning shortfalls at the federal leprosaria? If so, are these shortfalls due to a lack of qualified volunteers? The long duration of the disease process, the frequency of disabilities and strong prejudices create special problems often absent in other diseases.[8] Historical and biblical references to leprosy have given the disease a mythical aura. Moreover, these ancient sources have been important in setting apart not only the patients but also doctors and students of leprosy from the medical community at large.[9] While a social stigma is still somewhat attached to those who are exposed to the disease, the National Hansen's Disease Center has not experienced any significant difficulty in attracting and retaining volunteer staff members in sufficient numbers and quality to meet its 25 medical officer requirements. In fact, the Public Health Service reported that the stigma may be self-perpetuating. That is, "Those who treat Hansen's Disease patients receive extra pay, therefore these patients must be somehow different than people with other illnesses." [10] For this reason, the pay in actuality may be serving as a disincentive.

2. Creditability of Rates. Are LDP rates set at the minimum level necessary to attract and retain leprosarium duty medical officers despite the social stigma associated with such duty? As can be seen in the following table, the current LDP rate of \$110 per month represents approximately 2% of the total monetary compensation afforded the average LDP recipient. While this extra income is certainly welcome, there is

little evidence that the availability of LDP had any impact on the physicians' assignment decisions. In fact, leprosaria staffs successfully weathered a substantial special pay cut in 1949, when LDP was designated as HDIP and thereby reduced from 50% of base pay to approximately 25% of base pay at a time when the social stigma attached to treating "lepers" was significantly greater.

Table 1
Total Monthly Compensation
For Typical 1982 LDP Recipients

<u>TYPE PAY</u>	<u>GRADE</u>	
	<u>0-4¹</u>	<u>0-5²</u>
Regular Military Compensation:		
Basic Pay	\$2,305	\$2,695
BAQ	452	506
BAS	98	98
VHA (Carville, LA)	145	150
TOTAL	\$3,000	\$3,449
Special Pays:		
Variable Special Pay	\$ 791	\$ 750
Additional Special Pay	750	853
Board Certification Pay	166	208
Incentive Special Pay ³	0	0
LDP	110	110
TOTAL	\$1,817	\$1,921
Total Monthly Compensation for Typical LDP Recipient:	\$4,817	\$5,370
LDP as a percent of total monthly compensation:	(2.3%)	(2.0%)

NOTES:

- ¹ 0-4 with spouse and 2 children
10 years' of service for Basic Pay purposes
6 years' creditable service for Special Pay purposes
- ² 0-5 with spouse and 2 children
14 years' of service for Basic Pay purposes
10 years' creditable service for Special Pay purposes
- ³ PHS has chosen not to implement this pay; however, if these were DoD physicians, they would receive an additional \$416 per month in ISP.

VI. FINDINGS.

A. While the probability of being infected by Hansen's Disease is higher for the attending staff than for the endemic population, the low pathogenicity, i.e., the disease-producing capacity of the microorganism, coupled with the tightly controlled clinical conditions in which the medical officers perform their duties result in a considerably less hazardous working environment than was true in the past. Individuals who, in a hospital setting, have intimate contact with persons afflicted with Hansen's Disease are not exposed to a sufficient hazard to warrant a special pay.

B. The Uniformed Services are not experiencing significant problems in attracting or retaining quality personnel at Federal leprosaria.

C. Program Costs are approximately \$33,000 per annum.

VII. RECOMMENDATION. Eliminate Leprosarium Duty Pay. Repealing legislation should include a provision to allow those individuals receiving LDP at time of enactment to continue to receive that pay for the duration of their qualifying assignments.

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SUMMARY OF RESPONSES

Leprosarium Duty Pay

Issues:

1. Sufficient hazard does not exist to warrant a special pay.
2. A saved-pay provision should be included in the repealing legislation.

<u>Department</u>	<u>Response</u>
Army	Concurs.
Navy	Concurs.
Air Force	Concurs.
Coast Guard	Concurs with Issue 1, did not address Issue 2 in respect to Uniformed Services recipients.
PHS	Concurs.
NOAA	Defers to PHS.
JCS	Defers to PHS.

LEGISLATIVE IMPLICATIONS

Leprosarium Duty Pay

Repeal provision 301(a)(5) of 37 U.S.C. referring to leprosy. Provision should be made for individuals in receipt of LDP at time of enactment to continue to do so for the duration of their qualifying assignments.

37 U.S.C. 301(a)(4)
INCENTIVE PAY: HAZARDOUS DUTY INVOLVING PARACHUTE
JUMPING AS AN ESSENTIAL PART OF
MILITARY DUTY

PARACHUTE DUTY PAY

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PARACHUTE DUTY PAY

I. PURPOSE. Parachute Duty Pay is like other Hazardous Duty Incentive Pays in that it serves as a management tool to assist the military services in attracting individuals to assignments that imply substantial danger. The primary purpose of Parachute Duty Pay is to provide an incentive to those uniformed personnel for the performance of hazardous duty required by orders involving parachute jumping.

II. DATA SOURCES. Data were obtained from the Service Staffs of the Army, Navy, Air Force and Marine Corps, from the Forest Service of the United States Department of Agriculture and from selected historical reports and studies. The Coast Guard, Public Health Service and NOAA do not use Parachute Pay. Although not a primary data source, field interviews were conducted with parachutists at Fort Bragg, NC; MCAS, Cherry Point, NC, Naval Amphibious Bases, Little Creek, VA and Coronado, CA; and Norton AFB, San Bernardino, CA.

III. HISTORICAL PERSPECTIVE. When Congress initially set the rates for Parachute Duty Pay with the Act of June 3, 1941 (Pub. L. No. 77-98), they developed a costing based on both the hazards of flying and parachuting, since each was involved. Having determined that the \$750 per annum basic flight pay already in effect represented compensation for the "direct hazard of flying which is the same for all"¹ (flight pay calculated on 50% of base pay of a 2nd Lt. with less than 5 years), Congress concluded that parachute officers should receive this \$750 as recompense for their flying risks. In addition, since an operational parachute jump is not required of other flying personnel, a "reasonable amount" of \$500 a year for jumping risks was added, yielding a combined annual total of \$1,250 per year. After rounding to \$1,200, the officer rate was set at \$100 a month. The "career hazard" of Flight Pay, which considers the "cumulative stress and strain over a period of years" was not included because of the need "to change the personnel of these units frequently in order to meet the requirements for young and vigorous men."

Even though they are exposed to exactly the same flying and jumping risks as officers, the Senate Military Affairs Committee, in determining the 1941 Act rates, applied a "properly compensated"² standard to enlisted parachute personnel fixing the rate at \$50 per month, one-half the rate for officers. The 1948 Hook Commission supported this differential in rates with the following rationale:

"(1) Any special pay must be in proportion to the basic pay, so that at all times the compensation for the primary responsibility will be considerably greater than that for any additional duty.

(2) The rates proposed for hazard pay serve as an inducement to undertake and continue special duties; and such an inducement need not be as great in monetary terms for lower paid and less advanced personnel as for higher paid and more highly trained personnel.

(3) Officers are usually given greater special responsibilities, aside from normal military control, than enlisted personnel in hazardous assignments."³

The Hook Commission, during its study of the military pay system, indicated that although Parachute Duty Pay, along with similar special pays, originally was designed to compensate for arduous and hazardous duty, its primary purpose was an "incentive to engage and remain in hazardous occupation"⁴. The report downplayed the theory of payments for the risk of shorter career expectations as the sole argument for a hazard pay. These reasonings and recommendations resulted in the Career Compensation Act of 1949 (Pub. L. No. 81-351) which established \$100 a month for officers and \$50 a month for enlisted personnel as the rates for Hazardous Duty Incentive Pay-Parachute Duty. The Career Incentive Act of 1955 (Pub.L. No. 84-20) raised the rates to \$110 and \$55 and they remained at these levels until the Uniformed Services Pay Act of 1981 (Pub. L. No. 9760) when enlisted rates were increased to \$83 a month. (Reserve and National Guard units had been extended the pay in 1962 (Pub. L. 87-649) in a daily amount equal to 1/30th of the rates authorized for Active duty.)

Current Parachute Duty Pay requirements and minimum exposure standards were established in Executive Order 11157 of June 22, 1964. One jump qualifies a member for Parachute Pay for a consecutive 3-month period. If military operations or lack of equipment preclude the performance of a jump during a 3-month period, a member may qualify for the pay for the missed quarter plus the following nine months by performing four jumps at anytime during the 9 month period. During combat operation in a hostile fire zone, these requirements may be waived. Additionally, the President may suspend the payment of Parachute Duty Pay "in time of war."

During consideration of the Fiscal Year 1974 Department of Defense Appropriation Bill, the House Appropriations Committee questioned the need for the approximately 32,500 paid parachute positions since large numbers of helicopters had been added to the Army to allow for entry into combat by air instead of by parachute.⁵ The committee did not "question" the need for paratroop forces, but did reduce the Army authorized parachute position strength to 27,500, a restriction followed even today.

The cost of Parachute Duty Pay has varied greatly as shown in Table 1.

Table 1
Cost of Parachute Duty Pay
FY72-FY82

1972	\$26,820,000	1978	\$21,028,000
1973	25,967,000	1979	20,793,000
1974	22,455,000	1980	21,350,000
1975	20,206,000	1981	21,052,000
1976	19,122,000	1982	29,481,000
1977	19,621,000		

IV. METHODOLOGY. Since Parachute Duty Pay is categorized as a Hazardous Duty Incentive Pay, this analysis is aimed at determining the degree of risk and the usefulness of the pay in assisting the Services in meeting their force management requirements.

With these factors in mind then, the following questions were addressed during the review of Parachute Duty Pay:

1. Is parachute duty sufficiently hazardous to warrant a special payment?
2. Are the Services experiencing problems with attracting and retaining sufficient volunteers for parachute duty?

V. ANALYSIS.

A. HAZARD ISSUE. Is parachute duty sufficiently hazardous to warrant a special payment? In performing jump duties, a jumper is subject to the control of numerous personnel, each of whom can commit an error during the preparation and execution sequence. Additionally, there are the specific hazards associated with jumping and flying. Hazards include, but are not limited to, those of exiting the aircraft, entanglement with another jumper, parachute failure, dangerous landing conditions, and aircraft crashes. These can cause a reluctance on the part of the many individuals to remain in jump status for an extended period.

The hazards of parachute jumping are exacerbated during mass airdrops and combat situations. For example, during Gallant Eagle, a massive Army troop jump in 1982, there were 150 injuries and 6 deaths resulting primarily from impact with the ground and/or equipment on the ground.

HALO (High Altitude, Low Opening) jumps are executed at altitudes of greater than 10,000 feet with a free fall to low altitudes before parachute opening. Specially designed parachutes, oxygen bottles and release timers are used during these jumps. HALO jumpers incur additional hazards such as uncontrollable spins during the free fall portion of the jump, malfunction or depletion of the oxygen system, malfunction of the automatic release, and greater opening shocks.

Additional information collected during field interviews indicates that the cumulative effects of jumping over a period of years may cause medical problems during a jumper's career or later in life. Although no definitive study has been conducted, Medical Officers at the Army's 82nd Airborne Division have observed that long term jumpers have more incidents of neck and spinal injuries than non-jumpers or short term jumpers. The compounding effects of continual exposure to jumping result in spinal disc, knee, shoulder, ankle, and general bone problems. Doctors also have seen many instances of severe spinal arthritis in jumpers who used the older parachute systems and attribute this to the opening shock of these systems. The parachute in use today has less opening shock. Accordingly, doctors are now observing medical problems attributed more often to the cumulative effect of impact with the ground.

Because of the differing service methods of collecting and reporting accident information, detailed casualty data reflecting these hazards are not practical to obtain. The information contained in Table 2 below represents the available parachute casualty data as reported by the Services:

Table 2
Parachute Duty Casualty Data

<u>FY78-82</u>	<u>Auth (FY82)</u>	<u>No. of Injuries</u>	<u>No. of Deaths</u>
Army	26,897	1923	31
Navy	1,084	28	3
USMC	595	8	3
USAF	763	34	2

While these numbers show that risks are involved in parachuting, additional data to conduct a more meaningful analysis of casualty rates are not available from the Navy, Marine Corps, or Air Force. The Army, however, which comprises the largest numbers of total DoD parachute positions, has collected the greatest amount of safety data. These data, shown in Table 3, will be considered representative of parachute safety rates.

Table 3
Army Parachute Duty Casualty Data

	<u>No. of Jumps</u> <u>(rounded)</u>	<u>Injuries</u>	<u>Injuries per</u> <u>1000 Jumps</u>	<u>Deaths</u>	<u>Deaths per</u> <u>1000 Jumps</u>
78	276,000	360	1.3	2	.007
79	265,000	355	1.3	8	.030
80	246,000	314	1.2	7	.028
81	265,000	378	1.4	4	.015
82	209,000	516	2.5	10	.048

An increase in both injury and death rates occurred in 1982. This increase is attributed to the Army's effort to establish more realistic wartime training scenarios, i.e., more night jumps, more jumps at lower altitudes, and a greater variety of drop zones. Army paratroopers are now jumping with a full complement of combat equipment loads during training. Although these enhancements increase the warfighting skills of Army jumpers, they also increase the likelihood of injury. Since safety data is not available by skill, no direct comparison can be made to determine if personnel on jump status incur more hazards than members would generally expect to be exposed to in other skills. More importantly, though, it is not just the rates themselves that establish parachute duty as hazardous, but rather the added potential for death or injury. It is for this reason that parachuting is sufficiently hazardous to warrant special payment.

B. ATTRACTION AND RETENTION ISSUE. Are the Services experiencing problems with attracting and retaining sufficient volunteers for parachute duty? The Army, Navy, and Air Force have requirements for airborne personnel in career specialties. The Marine Corps, on the other hand, has a continued need for highly motivated jumpers in limited assignments. While parachuting is clearly a required skill associated with an airborne career, it is not normally an actual career field in itself. Retention and reenlistment data, which are compiled by skill, are not maintained for members on jump status. Therefore, no definitive statement of retention patterns of personnel performing parachute duty can be made.

The Army has 92% of the DoD parachute duty authorizations. It is also the only Service that maintains a fully deployable airborne division. While the Navy, Marine Corps, and Air Force have personnel in parachute status, such duty generally complements other primary duties such as rescue, diving, and demolition. In fact, many personnel in Services other than the Army do not draw Parachute Duty Pay because of Title 37, United States Code limitations regarding the number of hazardous and special pays that can be drawn concurrently. Accordingly, this analysis has relied on Army data.

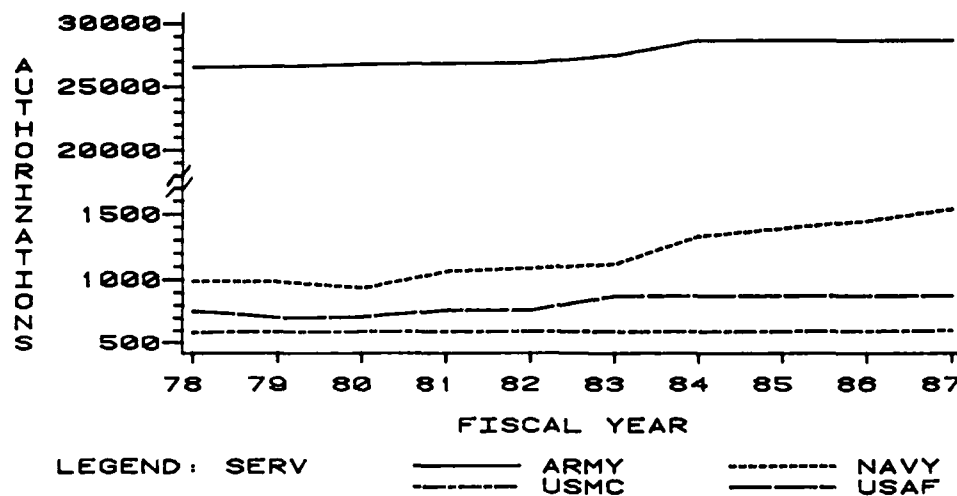
Parachute authorizations for FY78 through December 1982 and projected FY83 through FY87 are shown in Figure 1. The Services experienced relatively small but continued increases in their parachute authorizations through the entire period. Increases include, SEAL and EOD growth in the Navy and in the Army Special Forces. Additionally, the Army has requested that their current 27,500 limit on the total number of Army jumpers be lifted.

As can be seen in Table 4, the Army fell slightly below 100% of authorized in nearly all of the last five years and a significant drop of enlisted personnel occurred in FY82. With the exception of officer billets in the Army and the Marine Corps at the end of FY82, all Services were below desired manning.

Approximately 65% of the Army's parachute positions are located at the 82nd Airborne Division, Ft. Bragg, NC. Manning data provided by the 82nd shows that, as of 7 December 1982, the Army listed 94 skills as undermanned. Although some skills are undermanned Army-wide, many of the Military Occupation Specialties (MOS) are fully manned Army-wide but undermanned at the 82nd Airborne. For example, at the 82nd, the Artillery Specialist (16R MOS) authorizations are manned (as of Dec 82) at 78% while Army-wide manning stands at 107%. Combat Engineers (12B MOS) are manned at 89% and 101% 82nd and Army-wide, respectively. This may indicate a reluctance of personnel in these skills to volunteer for parachute duty.

Figure 1

PARACHUTE DUTY AUTHORIZATIONS FY78 PROJECTED THROUGH FY87



AS OF DECEMBER 82

Table 4
Parachute Duty Manning Data
(Number assigned/percent of authorized)

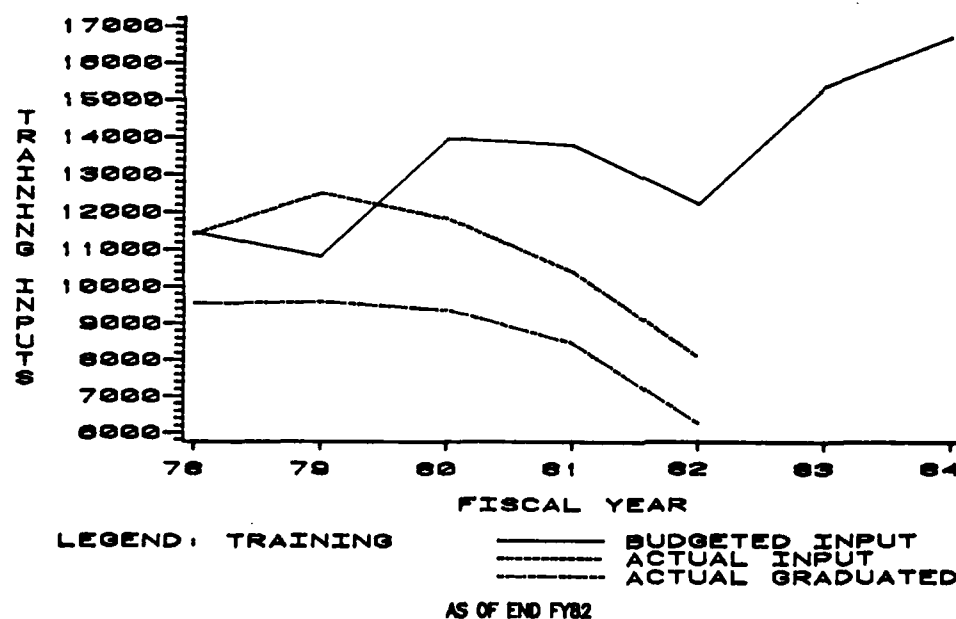
	FY78	FY79	FY80	FY81	FY82
Army					
Officer	2330/90%	2410/93%	2356/90%	2448/94%	2611/100%
Enlisted	24239/101%	23770/99%	23864/99%	24172/99%	22264/92%
Navy					
Officer	171/97%	177/114%	180/112%	248/120%	238/94%
Enlisted	588/72%	614/77%	740/98%	792/98%	755/91%
USMC					
Officer	N/A	N/A	N/A	N/A	77/100%
Enlisted	N/A	N/A	N/A	N/A	443/86%
USAF					
Officer	N/A	N/A	N/A	N/A	138/89%
Enlisted	N/A	N/A	N/A	N/A	495/81%

The Navy attributes shortages to a lack of volunteers for duties that include parachuting. The Air Force has had problems in the past obtaining volunteers for the Combat Control Teams. Recent policy changes (1983) have expanded the accessions base into the career field. According to the Marine Corps, the dynamics of the assignment system are responsible for their shortfalls. Their shortages often occur because personnel are in the assignment or training pipeline.

The Army's shortfalls stem from a lack of volunteers for training slots. Projections are used to estimate the inputs required each year to man the Army's parachute duty positions. In 1982, budgetary constraints limited the training input required to approximately 12,000 against a projected requirement for 14,000. Training input is expected to increase through 1984 as a result of increased training authorizations. However, actual training inputs and graduates remain below requirements and are decreasing. The Army has recently established an Airborne Improvement Plan to attempt to solve the problem of decreasing volunteers. Basic parachute training school data for the Army are shown in Figure 2.

Figure 2

ARMY PARACHUTE TRAINING ENLISTED PERSONNEL FY78 - FY84



Fiscal Year 1982 training costs for the various types of training required of the numerous airborne positions are reflected in Table 5.

Table 5
Parachute Duty Training Costs

<u>Type Training</u>	<u>Officer Costs</u>	<u>Enlisted Costs</u>
Parachute	\$ 3,300	\$ 2,400
Ranger	18,700	16,700
Pathfinder	5,100	4,500
Rigger	N/A	13,400
Jumpmaster	8,100	7,300
Special Forces:		
Qual Course	26,500	40,600
Underwater Ops	9,000	7,600
Ops and Intel	N/A	22,900
Free Fall	10,400	9,100

Actual training costs are basically the same for officers and enlisted. The variances result from differing pay and allowances and per diem. Since the Army conducts parachute training for all the other services, their costs will be similar.

Losses of trained personnel can be quite costly. Based on the figures in Table 5, for example, the loss of one trained ranger would necessitate training a replacement at \$19,100. The Special Forces (SF) enlisted soldier would cost \$43,000 and jumpmaster costs could be added to either of these examples, making replacement expenditures even more significant.

Attrition rates for officers attending the basic course during FY82 were 19.4%. Enlisted attrition was 22.6%, almost one fourth of the already short supply of volunteers and up from 18.8% the year earlier. Moreover, the Army reported 8% to 9% enlisted attrition from permanent-party airborne positions in FY82. This loss of about 2,300 personnel equates to a training cost of approximately \$5.6 million just for the basic course alone. Training attrition data is difficult to obtain and is limited to the Army data contained in Table 6.

Table 6
Training Attrition Data

<u>Training</u>	<u>Officer</u>	<u>Enlisted</u>		
	<u>FY82</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
Parachute	19.4%	20.9%	18.8%	22.6%
Ranger	27.3%	29.5%	37.6%	32.1%
Special Forces	32.8%	55.2%	61.3%	62.8%

Sufficient data are not available to clearly determine if actual parachute duty manning problems exist in the Services. Although data show that the Services are experiencing some shortfalls in parachute duty billets, it is difficult to determine if the shortfalls are associated with the actual jumping, the skill that requires the jump qualifications, or local unit or Service-unique problems.

C. FOREIGN NATIONS. Many foreign countries have seen the need to provide monetary incentives for their paratroopers.⁶ Table 7 represents Parachute Duty Pay rates in foreign military services as of December 1980.

Table 7
Parachute Duty Pay - Foreign Military Service
(US \$ as of April '83)

Australia:	A\$6.45 (US \$6.00) per jump (Trainees)
	A\$354 (US \$306.00) per year (Qualified) - 3% of E-5 pay
	A\$809 (US \$700.00) per year (Instructors) - 7% of E-5 pay
Canada:	C\$75 (US \$61.00) per month (unless receiving aircrew rescue specialist, or air duty allowance) - 5% of E-5 pay
	C\$20 (US \$16.00) per jump (max paratroop allowance) C\$75 (US \$61.00) per month for casual
France:	Aeronautical Service Allowance (amt. not given)
Germany (FRG):	DM150 (US \$62.00) per month (Tax exempt) - 12% of E-5 pay
	DM45 (US \$19.00) per month - 4% of E-5 pay (qualified personnel but not assigned to duty)
Israel:	Supplemental Pay (amt. not given)
UK:	£39 (US \$58.00) per month (all ranks) - 7% of E-5 pay £44.40 (US \$66.00) per month (instructors) - 8% of E-5 pay

D. CIVILIAN CAREER OPPORTUNITIES. Civilian career opportunities of jumpers are limited. The United States Department of Agriculture Forest

Service hires personnel during December and January of each year for work as smokejumpers. A smokejumper's primary job is fighting fires with more weight being given to their firefighting capabilities when selecting candidates. First-year smokejumpers are employed at the GS-5 level (\$6.43 per hour, approximately \$5,200 per season). Experienced smokejumpers are hired at the GS-6 level (\$7.16 per hour, approximately \$5,700 per season). Overtime hours are paid at one and one half times the hourly rate. Smokejumpers receive a hazardous duty differential but it is for duty unrelated to parachuting. Smokejumping is seasonal work and employment usually lasts approximately 5 months each year. The lack of, and instability of, outside career job offers do not create a pull to the civilian market for paratroopers as in other fields.

E. RATES. Do Parachute Duty Pay rates, as currently structured, support the purpose of the pay? The purpose of Parachute Duty Pay is twofold: to provide an incentive to participate in parachute jumping, and to compensate somewhat for the actual risk involved in jumping.

Current rates for Parachute Duty Pay are \$110 and \$83 per month for officers and enlisted personnel, respectively. This equates to 6% of an E-5's Basic Military Compensation. During field interviews, both officers and enlisted personnel indicated that they volunteered for other than monetary reasons. Most believe that the value of the payment has diminished to the point that it is inadequate compensation for the hazards they encounter in jump status. The pay is viewed as a reward for risk and has no measureable effect on their decisions to volunteer for or remain on jump status.

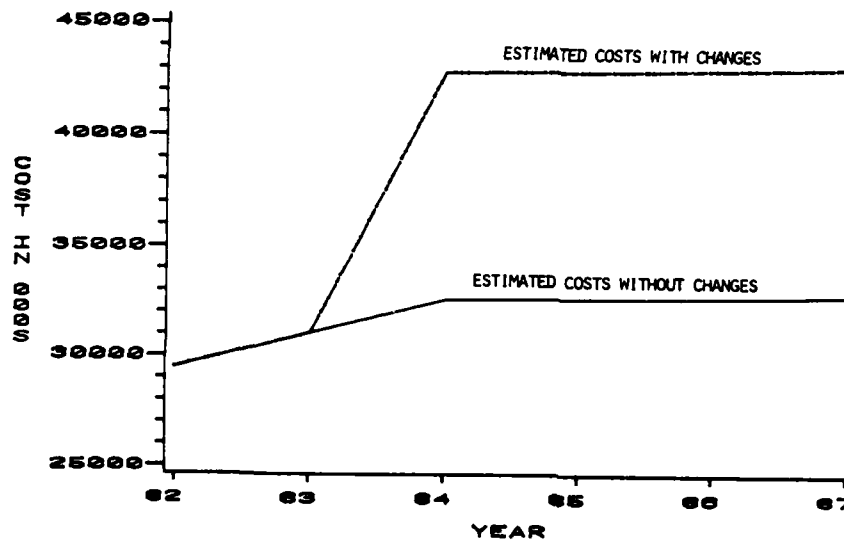
Since the hazards are the same for both officer and enlisted jumpers, it is appropriate to establish a single basic rate for Parachute Duty Pay. This same rate would apply to Novices, Senior and Master jumpers (Army badge categories) since it cannot be demonstrated that the hazard of jumping increases with higher jump rating with one exception, HALO jumpers. The establishment of a higher pay rate for these free-fall jumpers would more adequately remunerate personnel who assume the extra risk of HALO duties. Currently, the Army is revitalizing special operation units. These units are trained to conduct unconventional warfare in denied areas -- behind enemy lines. Insertions into denied areas are accomplished using HALO techniques.

Since a hazard rate should be the same for officers and enlisted personnel, the enlisted rate should be increased to \$110 per month. Furthermore, while it is recognized that HALO jumpers assume greater risks, it is difficult to gauge the degree of these added dangers to arrive at an appropriate amount. We believe, however, that a reasonable amount of compensation for taking on risks significantly greater than the basic parachutist is an additional 50% of the regular rate, i.e., \$165.

The estimated additional cost for the aforementioned Parachute Duty Pay increases is reflected in Figure 3.

Figure 3

COST OF PARACHUTE DUTY PAY PROPOSED CHANGES FY82-FY87



Since adequate data is not available to determine definitive manning trends, it cannot be determined at this time whether true manning problems exists in parachute billets. If a Service's manning problems as a whole or in selected skills are evident, those shortages are best handled with the incentive pays that are designed to alleviate shortages such as Selective Reenlistment Bonuses (SRB) rather than by increasing Parachute Pay DoD-wide. For example, the reported reluctance by personnel to become jumpmasters because of added responsibilities can be solved using the proposed Special Duty Assignment Pay (replaces Proficiency Pay). An overall increase in a hazard related pay is not the proper means to solve isolated manning problems.

VI. FINDINGS.

A. Parachute duty is sufficiently dangerous to warrant a special pay for hazardous duty.

B. Adequate data is not available to clearly determine if actual manning problems exist; however, if isolated manning problems are present, they are best handled with incentive pays designed to eliminate significant shortages, such as SRBs. If it is desirable to recognize achievement of unusual skill levels or responsibility, then the use of the proposed Special Duty Assignment Pay (replaces Proficiency Pay) would be more appropriate.

C. An appropriate amount for performing basic parachute duty is \$110 per month. This rate should be the same for officer and enlisted jump personnel, since they are exposed to the same risks.

D. HALO jumpers are exposed to significantly increased risks and should receive compensation equal to regular jump pay plus 50%.

VII. RECOMMENDATIONS.

A. Retain Parachute Duty Pay.

B. Compensate for manning shortages in isolated positions through incentive pays designed to eliminate shortages such as SRBs. Compensate for added responsibilities in unique cases, i.e., jumpmasters, through the proposed Special Duty Assignment Pay.

C. Increase enlisted Parachute Duty Pay rates to \$110 per month, eliminating officer and enlisted rate differentials.

D. Add a provision to Title 37 USC 301 to compensate HALO jumpers at a level equal to basic Parachute Duty Pay plus 50%.

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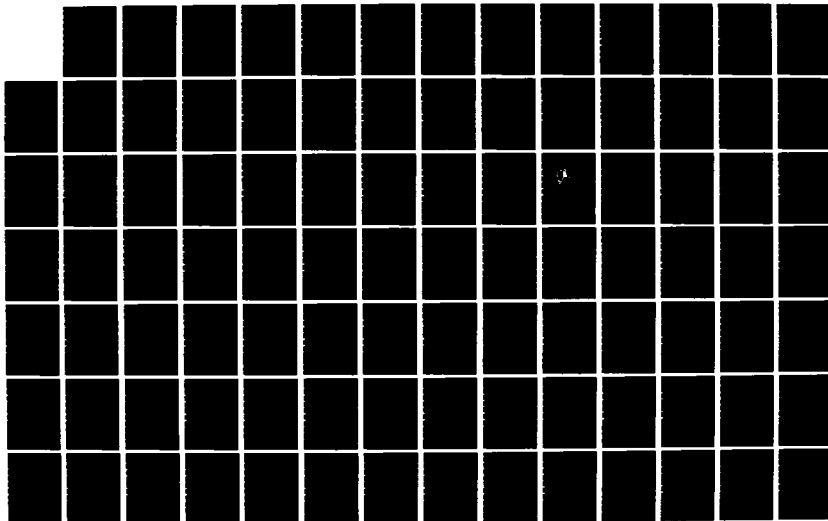
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VOLUME 3 SPECIAL AND INCENTIVE PAYS(U) OFFICE OF THE
SECRETARY OF DEFENSE WASHINGTON DC NOV 83

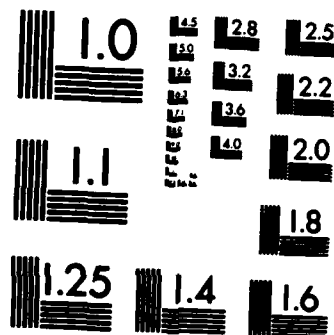
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References

1. All quotations in this paragraph from Senate Report No. 259, p.2, accompanying S.1063, 77th Congress, 1st Session.
2. Ibid.
3. Career Compensation for the Uniformed Forces, A Report and Recommendation for the Secretary of Defense by the Advisory Commission on Service Pay, p. 27, December 1948.
4. Ibid, p.24.
5. Senate Report No. 93-662, Department of Defense Appropriation Bill, 1974, 93d Congress, 1st Session, p.66, 1974.
6. Preliminary Analysis of Military Compensation Systems in the United States and Five other Countries, Report by the U.S. General Accounting Office, Dec 31, 1980

Other Sources

Compensation Elements and Related Manpower Cost Items Their Purpose and Legislative Background, Military Compensation Background Papers, Second Revised Edition, Office of the Secretary of Defense, July 1982.

SUMMARY OF RESPONSES

Parachute Pay

Issues:

1. There is a valid need to provide Parachute Duty Pay.
2. An appropriate amount for performing parachute duty is \$110 per month. This rate should be the same for officer and enlisted jump personnel, since they are exposed to the same risks.
3. HALO jumpers are exposed to significantly increased risks and should receive compensation equal to regular jump pay plus 50%.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs, except proposes variable, by grade rates.
Air Force	Concurs, except desires to keep officer/enlisted differential.
Coast Guard	Agrees in principle. Does not currently use the pay.
Public Health Service	Concurs.
NOAA	Defers to Services utilizing the pay.
JCS	Concurs.

LEGISLATIVE IMPLICATIONS

Parachute Duty Pay

1. Amend 37 U.S.C. 301(c)(1) to reflect the increase in the enlisted rate by eliminating any reference to an enlisted rate and deleting the word "officer" in regard to the \$110 rate.
2. Add a provision to 37 U.S.C. 301 to compensate HALO jumpers at a rate of 50% above basic jumpers.

37 U.S.C. 301(a)(12)
INCENTIVE PAY: HAZARDOUS DUTY INVOLVING THE SERVICING OF
AIRCRAFT OR MISSILES WITH HIGHLY TOXIC
FUELS OR PROPELLANTS

TOXIC FUELS AND PROPELLANTS PAY

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TOXIC FUELS AND PROPELLANTS EXPOSURE PAY

I. PURPOSE. To provide an incentive to those Uniformed Services personnel for the performance of hazardous duty required by orders involving the servicing of aircraft or missiles with highly toxic fuels or propellants.

II. DATA SOURCES. Much of the information used in this analysis was obtained from the Services in response to 5th QRMG requests. Other sources include the Office of Personnel Management, the Environmental Protection Agency, and the Occupational Safety and Health Administration. A field interview was conducted with personnel receiving this pay at Edwards AFB, CA.

III. HISTORICAL PERSPECTIVE. Hazardous Duty Incentive Pay for personnel working with toxic fuels and propellants was first authorized in law by the Uniformed Services Pay Act of 1981 (Public Law 97-60). The addition of this category of hazard to Section 301, Title 37 came about as a result of DoD initiated legislation proposing that Service Secretaries be authorized to determine those duties within their respective departments which qualified for Hazardous Duty Incentive Pay. Included in the legislative proposal was a description of various duties for which the Services would consider authorizing special pay. Toxic Fuels and Propellants (TF&P) was one such category. The House of Representatives' version of the Pay Act (HR3380) had such a provision and would have allowed payment of Hazardous Duty Incentive Pay to members performing duties which were determined by the Secretary to be either unusually hazardous or performed under unusually severe working conditions¹. The Senate Bill (S1181) did not provide the same flexibility but did recommend the addition of three new categories of Hazardous Duty Incentive Pay, including toxic fuels and propellants, stating:

This section recognizes the extensive personal sacrifices made by military members whose daily duties place them in imminent danger from hazards such as toxic, lethal, or carcinogenic substances or whose routine duties involve hazardous working conditions.²

The Senate version of the bill prevailed in the joint conference and 37 U.S.C. 301 was amended to add duties involving the servicing of aircraft or missiles with highly toxic fuels or propellants as a category qualifying for Hazardous Duty Incentive Pay.³

After extensive coordination among the Services, Executive Order 12394, dated 18 November 1982, implemented the provisions of the Pay Act of 1981 with respect to toxic fuels and propellants. This Executive Order defined duty involving the servicing of aircraft or missiles with highly toxic fuels or propellants as a primary duty, which requires:

- Removal, replacement, and servicing of the emergency power unit of an aircraft with H-70 propellant (including participation in an emergency response force, spill containment, or spill cleanup involving H-70);
- Handling and maintaining the liquid propellants used in the Titan weapon system providing the duty requires qualification in the use of the Rocket Fuel Handler's Clothing Outfit and further involves the performance of specific operations involving the fuel system;
- Handling and maintaining the propellants used in the LANCE missile system; or
- Handling and maintaining the toxic substances contained in missile or aircraft weapon system propellants as determined by the Secretary concerned.⁴

Members qualifying for TF&P Hazardous Duty Incentive Pay receive compensation at the rate of \$110 per month for officers and \$83 per month for enlisted personnel.

IV. METHODOLOGY. Because this special pay was only recently authorized, an in-depth analysis of its effectiveness is not feasible. However, this review will provide a descriptive baseline from which future analyses may draw. The first section will identify the number of personnel receiving the pay, current and projected costs of the pay, and a brief description of the duties performed by TF&P Pay recipients. The second part will discuss the hazards involved in handling toxic fuels and propellants and manning of TF&P authorizations. The final section will evaluate the rates of TF&P Pay and discuss possible future applications of the pay.

V. ANALYSIS.

A. SECTION ONE. Of the seven Uniformed Services, only the Army and Air Force use TF&P Pay. The number of TF&P Pay authorizations by Service is shown in Table 1. Projections of TF&P authorizations for FY84 to FY87 are found in Table 2.

Table 1
Toxic Fuels and Propellants Pay
FY83 Authorizations by Service

<u>Service</u>	<u>Officer</u>	<u>Enlisted</u>	<u>Total</u>
Army	0	21	21
Air Force	26	596	622
	26	617	643

Table 2
Projected TF&P Authorizations by Service
FY84 - FY87

<u>Service</u>	<u>Fiscal Year</u>			
	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>
Army	21	21	21	21
Air Force	<u>659</u>	<u>589</u>	<u>523</u>	<u>566</u>
Total	680	610	544	587

Army authorizations for the pay are projected to remain constant over the period shown. Air Force authorizations indicate an overall reduction from FY84 to FY87, with a small increase between FY86 and FY87. This trend reflects gradual drops in the number of authorizations (from 252 in FY84 to 91 in FY87) for personnel working in the Titan missile program as the system draws down. The projections also reflect small annual increases in those skills required to service emergency power units as additional F-16 aircraft are brought into the Air Force inventory. The increase in authorizations from FY86 to FY87 results from an increase of 45 authorizations in the F-16 maintenance area.

Table 3 shows the projected costs of TF&P Pay from fiscal year 1983 to 1987.

Table 3
Projected TF&P Costs
FY83 - FY87

<u>YEAR</u>	<u>COST</u>
FY83	\$648,852
FY84	\$688,944
FY85	\$615,336
FY86	\$546,036
FY87	\$609,456

Within the Air Force there are two general occupations which qualify personnel for TF&P Pay. The first group of personnel perform duties which require the handling and maintenance of the liquid propellants used in the Titan missile system. Personnel in this category qualify for the pay provided they are required to maintain qualifications in the use of the Rocket Fuel Handler's Clothing Outfit and perform duties involving launch duct operations, set-up, installation, or tear-down for fuel oxidizer

flow, decontamination of equipment, venting or pressurizing fuel or oxidizer tanks, removing or replacing missile components while missile fuel and oxidizer tanks are loaded, transferring propellants between holding tanks, or certain preventive maintenance activities.

Personnel performing such work are normally Missile Maintenance Specialists (AFSC 443XOE), Missile Liquid Propellant Systems Maintenance Specialists (AFSC 445X1), or Missile Maintenance Officers (AFSC 31XXF).

The second group of Air Force recipients are certain Aircraft Fuel Systems Mechanics (AFSC 423X3) who service F-16 aircraft, including the emergency power unit. Servicing of this system is required whenever the system has been activated.

The 21 Army positions authorized to receive TF&P Pay are assigned to the LANCE missile system. All of these personnel belong to MOS 27L, Lance System Repairer, and are assigned to duties as members of a Propellant Drainage Kit (PDK) Team. In the course of their duties they are required to don protective clothing, including an oxygen generating breathing apparatus, in order to drain propellant or oxidizer from the missile system.

B. SECTION TWO.

1. Associated Hazards. The potential hazards faced by personnel in the previously described fields lie in the possible exposure to the liquid propellants (both fuel and oxidizer) utilized in missiles and the emergency power unit of the F-16 aircraft. The propellant for the Titan missile has two components: unsymmetrical dimethylhydrazine (UDMH), the fuel; and nitrogen tetroxide, the oxidizer. The LANCE missile system also uses UDMH as the fuel and inhibited red fuming nitric acid (IRFNA) as the oxidizer. H-70 propellant, a mixture of 30% water and 70% hydrazine, is used in the emergency power unit of the F-16 aircraft.

Hydrazine, in either its pure form or as contained in UDMH, is an oily, colorless, fuming, and flammable liquid. It is highly corrosive and a severe skin irritant, causing second and third degree burns on short contact. Hydrazine may also be absorbed through either the respiratory system or the skin. Exposure to vapors will cause swelling and blistering of eyelids, skin, nose, and throat. Absorption or ingestion causes nausea, dizziness and headache. Severe exposure to hydrazine or UDMH may even cause death. Hydrazine is also a suspected carcinogen. The maximum permissible exposure to hydrazine (threshold limiting value) set by the Occupational Safety and Health Administration (OSHA) is .1 part per million (PPM). The National Institute for Occupational Safety and Health (NIOSH) has recommended a work place limit of .03 ppm which is the lowest detectable level of exposure.⁵

Nitrogen tetroxide is a dark brown, fuming, liquid or gas with a pungent acrid odor. Exposure can occur through either contact or inhalation. Inhalation poses the most serious threat with the first effects usually delayed by several hours. Symptoms of exposure may include fatigue, coughing, difficulty in breathing, and in some instances, pulmonary edema where the lungs fill with water. Because nitrogen tetroxide interferes with the exchange of gas in the lungs, unconsciousness and death by asphyxiation may result. The maximum allowable exposure limit to nitrogen tetroxide as determined by OSHA is 5 ppm. NIOSH has recommended that this ceiling be reduced to a level of 1 ppm averaged over a 15 minute period. Nitrogen tetroxide is also violently reactive with hydrazine or any other combustible such as wood or cloth.⁶

Red fuming nitric acid (RFNA) is a colorless to light brown liquid, emitting an acrid, choking odor. It reacts violently with combustible materials such as wood or metal powders. When nitric acid is exposed to air or organic material, it decomposes to yield a mixture of toxic gases and vapors. Contact with nitric acid or its vapor may cause severe burns and can result in permanent visual impairment if it enters the eye. Exposure to high concentrations of nitric acid vapor or mist can cause pneumonitis or pulmonary edema which may be fatal. The current OSHA standard is 2 ppm averaged over an eight-hour work shift. NIOSH has recommended a permissible exposure limit of 2 ppm averaged over a work shift of up to ten hours per day, forty hours per week.⁷

In the course of their duties, the technicians qualifying for TF&P Pay are repeatedly subjected to potential exposure to these lethal chemicals. Protective clothing, including an elaborate breathing apparatus, is essential in their work. Other hazards can result from major spills or explosion of these volatile fuels. Additionally, the corrosive action of the chemicals on the protective suits and equipment tends to increase the chances of exposure.

Injuries occurring in the toxic fuels field for FY78 to FY82 are shown in Table 4. The predominance of the reported casualties occurred in the Titan missile area. While the actual number of casualties are not great, it should be realized that extraordinary safety precautions are required throughout the missile program, since an accident could impact personnel and property throughout the local community. Representative of the catastrophic hazards involved in handling toxic fuels is a 1980 accident near Damascus, Arkansas, where fuel leaking from an "on duty" missile caused an explosion, destroying the missile and silo, killing one airman, and injuring six others.

Table 4
TF&P Casualty Data
FY78-82

<u>Type</u>	<u>Number</u>
Temporary disabling injuries	10
Injuries rendering personnel unfit for continued active service	2
Fatalities	<u>3</u>
TOTAL	15

2. Manning.

a. Army. Army authorizations for TF&P Pay in FY83 are displayed in Table 5.

Table 5
Army TF&P Authorization Structure
FY83

<u>Pay Grade</u>	<u>No. Authorizations</u>
E-6	3
E-5	6
E-4	10
E-3	<u>2</u>
TOTAL	21

Volunteering for duty in the TF&P field is not a prerequisite to an assignment requiring the handling of the fuels. Assignment to these positions is made by selection. Manning has been 100%.

b. Air Force. Like the Army, the Air Force does not require that personnel handling toxic fuels be volunteers.

(1) AIRCRAFT FUEL SYSTEMS MECHANIC (AFSC 423X3). Within this career field, only those mechanics servicing the F-16 aircraft qualify for TF&P Pay. In fiscal year 1983, 372 positions are expected to receive the pay. This number will grow to 475 by FY87. The projected FY87 authorization structure is shown in Table 6.

Table 6
FY87 TF&P Authorizations
AFSC 423X3

<u>Pay Grade</u>	<u>No. Authorizations</u>
E-8	1
E-7	27
E-6	41
E-5	106
E-4	153
E-3	147
<u>TOTAL</u>	<u>475</u>

Overall manning in this AFSC currently ranges from 96% to 100% throughout the Major Commands. A manning problem in this area cannot be identified due to: moderate growth in authorizations between FY83 and FY87, current healthy manning levels for the AFSC, and an FY87 authorization structure with the bulk of authorizations concentrated in the lower pay grades (85% E-5 and below, 63% E-4 and below).

(2) MISSILE MAINTENANCE OFFICER (AFSC 31XXF). Requirements for this officer specialty will decrease from 36 in FY84 to 12 in FY87. Shortages do not exist and adequate manning of these positions is expected.

(3) MISSILE MAINTENANCE SPECIALIST (443XOE) and MISSILE LIQUID PROPELLANT SYSTEM MAINTENANCE SPECIALIST (445X1). Current and projected (FY 87) authorizations for personnel within these two career fields qualifying for TF&P Pay appear in Table 7.

Table 7
TF&P Authorizations for FY83 and FY87
AFSCs 445X1 and 443XOE

<u>Pay Grade</u>	<u>FY83 Authorizations</u>	<u>FY87 Authorizations</u>
E-8	3	0
E-7	4	4
E-6	24	13
E-5	43	19
E-4	47	17
<u>E-3/2/1</u>	<u>103</u>	<u>26</u>
<u>TOTAL</u>	<u>224</u>	<u>79</u>

Overall manning in these AFSCs is good despite some mid-grade NCO (E-5, E-6) undermanning which is partially compensated by overmanning in positions E-4 and below. Current manning coupled with decreasing requirements should preclude serious manning difficulties within these positions.

In summary, positions qualifying for TF&P Pay are satisfactorily manned and are expected to remain that way in the foreseeable future.

C. SECTION THREE.

1. Rates of TF&P Pay. The rates of TF&P Pay are identical to the rates for other Hazardous Duty Incentive Pays. The enlisted rate of \$83.00 per month was increased by 50% from \$55.00 per month at the same time TF&P Pay was authorized. Assuming \$83.00 per month was an appropriate value at the time of the 1981 Pay Act, the current rate of TF&P Pay for enlisted members based upon CPI increases should be roughly \$100.00 per month.

Here, the issue of different rates for officer and enlisted personnel should also be addressed. In determining the degree of hazard to which personnel receiving TF&P Pay are exposed, it is difficult, if not impossible, to gauge an exact measure of hazard in comparison to other types of duty. To discern a measurable difference in the degree of hazard to which officers versus enlisted personnel are exposed would prove equally futile. Thus, equal rates of hazard pay for both are believed to be appropriate as each is subjected to the same general degree of hazard. The current officer rate is \$110 per month. As previously discussed, \$100 per month is believed to be a generally appropriate enlisted rate. In order to avoid reductions in payments to officers, and because the \$100 rate was based primarily on a generally increasing CPI, a flat rate of \$110 per month for both officer and enlisted is believed appropriate.

2. Comparison.

a. Public Sector. Federal employees performing work similar to Uniformed Services' TF&P Pay recipients receive a hazard pay differential. For General Schedule (GS) employees the differential is 25% for working with, or in close proximity to, toxic chemical materials when there is a possibility of leakage or spillage, tanking and detanking of missiles, and arming and disarming propulsion systems.⁸ An 8% hazard differential is offered under the Federal Wage System for participation in missile liquid or solid propulsion situations including assembly, disassembly, or repair of plumbing contaminated with hypergolic fuels, and fueling/defueling operations.⁹

Eighty-three dollars per month currently represents between 11 percent (E-3 over 3 years of service) and 6 percent (E-7 over 14 years of service) of basic pay for the majority of Service recipients. The civilian differentials are paid only for those days actually engaged in the hazardous duties while military members receive TF&P Pay on a monthly basis. However, Service Personnel are assigned to these duties on a full-time basis and the handling of toxic fuels and propellants is their primary duty.

b. Private Sector. The handling of toxic fuels or propellants is generally an area of work restricted to the Federal sector. Therefore, no direct comparison with this type of work in private enterprise exists. However, a 1977 "Survey of Compensation Practices for Unusual Working Conditions" conducted by the Civil Service Commission found that among 111 companies employing personnel to handle or work with toxic chemicals, 18 paid some form of pay differential. Reported differentials varied widely and ranged from 5 cents per hour extra up to a maximum of 50% of the hourly wage. No one differential rate was predominant.¹⁰

3. Future Applications. The language of Title 37 U.S.C. currently restricts the payment of TF&P Pay to personnel servicing aircraft and missiles with highly toxic fuels and propellants. Within the Services there are personnel who also handle highly toxic fuels, propellants and munitions but, because their duties do not involve either aircraft or missiles, are precluded from receiving the pay. The Air Force estimates that approximately 84 personnel assigned to either the Air Force Rocket Propulsion Laboratory (AFRPL) or the Rocket Sled Track Facility (RSTF) fall within this category. Performing research in pursuit of improved propulsion systems, AFRPL personnel risk exposure to a variety of experimental propellants. Also, a small number of personnel at the RSTF frequently handle propellants, including unsymmetrical dimethylhydrazine and red fuming nitric acid which power rocket sleds. The Air Force has proposed legislation amending Title 37 to allow payment of TF&P Pay to these personnel, correcting what appears to be an inequitable situation.

A number of Army personnel face the risk of possible exposure to highly toxic chemicals. Approximately 400 members, assigned to arsenals and depots, perform duties including processing, refurbishing, and maintaining chemical munitions containing GB and VX nerve agents. These vapors and liquids are designed for quick acting lethality, are rapidly absorbed through the skin and respiratory system, and can cause death in between one and ten minutes. As would be expected, the toxicity of these chemical agents is substantially higher than the toxicity of most fuels. In comparison, the current OSHA threshold limit value (time weighted average over an 8-hour shift) for exposure to hydrazine is .1 MG/M³, while the Army has set work place concentration limits (time weighted average over any workshift) at .0001 MG/M³ for GB and .00001 MG/M³ for VX vapors. Although strict safety measures, including protective clothing and a breathing apparatus, are employed when working with these munitions, the potential for inadvertant exposure remains.

Personnel assigned to duties requiring the handling of chemical munitions belong to a spectrum of career fields (2 officer and 7 enlisted MOSs). Assignments are not made on a volunteer basis and thus, manning shortfalls in these positions do not exist. Department of Defense Civilian Personnel involved in chemical munitions maintenance are paid environmental differentials of 8 or 4 percent, depending on whether the

job represents a high or low degree of hazard. Under the current provision of Title 37, military personnel are not entitled to Hazardous Duty Incentive Pay for handling chemical munitions.

VI. FINDINGS.

A. There is currently a need to provide special compensation to personnel performing duty in the hazardous TF&P field.

1. TF&P duty exposes personnel to greater risks than those normally encountered by most service personnel.

2. Manning levels within the field are satisfactory.

B. The rates of TF&P Pay are believed generally adequate.

1. The effectiveness of TF&P Pay rates cannot be determined because of the recent authorization of the pay.

2. Officer and enlisted personnel serving in the TF&P fields should receive equal compensation for exposure to TF&Ps.

3. An appropriate rate for both officer and enlisted personnel receiving TF&P Pay is \$110.00 per month.

C. Certain personnel in the chemical munitions field risk exposure to chemicals of an equal or greater toxicity than many highly toxic fuels and propellants for which no Hazardous Duty Incentive Pay entitlement exists.

VII. RECOMMENDATIONS.

A. Continue Toxic Fuels and Propellants Exposure Pay (TF&P).

B. Amend Title 37 to:

1. Entitle both officer and enlisted personnel to \$110/month for performance of TF&P duties.

2. Include duty involving the handling of chemical munitions within the definition of hazardous duties.

References

1. H.R. 338, 97th Congress, 1st Session, p. 5.
2. Senate Report No. 97-146 accompanying S. 1181, July 8, 1981, p. 7.
3. House of Representatives Report No. 97-265 accompanying S. 1181, October 6, 1981, p. 22.
4. Executive Order 12394 of November 18, 1982, amending Executive Order 11157 of June 22, 1964.
5. "Documentation of the Threshold Limit Values (4th ed.)," American Conference of Governmental Hygienists, Inc., 1981.
6. "Occupational Health Guidelines for Chemical Substances" U.S. Government Publication No. 81-123, January, 1981.
7. "Chemical Hazards Response Information System," U.S. Coast Guard Manual Instruction M16465.12, 1978.
8. Federal Personnel Manual Supplement 990-2, Appendix E, "Background Information on Appendix A to Part 550," July, 1969.
9. Federal Personnel Manual Supplement 532-1, Appendix J, "Schedule of Environmental Differentials," April 14, 1980.
10. "Summary of Compensation Practices for Unusual Working Conditions," U.S. Civil Service Commission, 1977.

SUMMARY OF RESPONSES

Toxic Fuels and Propellants Exposure Pay

Issues:

1. Toxic Fuels and Propellants Pay should be continued and expanded to include personnel in the chemical munitions field.
2. It is too early to determine the effectiveness of the pay.
3. There should be a flat rate for both officer and enlisted personnel.
4. A flat rate of \$110/month is appropriate.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Suggests flat rate of \$125/month.
Air Force	Concurs.
Coast Guard	Concurs.
Public Health Service	Concurs.
NOAA Corps	Concurs.
JCS	Concurs.

LEGISLATIVE IMPLICATIONS

Toxic Fuels and Propellants Duty Pay

1. Amend 37 U.S.C. 301(c)(1) to reflect the increase in the enlisted rate by eliminating any reference to an enlisted rate and deleting the word "officer" in regard to the \$110 rate.
2. Amend 37 U.S.C. 301 to include duty involving the handling of chemical munitions within the definition of hazardous duties.

37 U.S.C. 301(a)(11)

INCENTIVE PAY: HAZARDOUS DUTY INVOLVING FREQUENT AND
REGULAR EXPOSURE TO HIGHLY TOXIC PESTICIDES
OR INVOLVING LABORATORY WORK THAT UTILIZES
LIVE DANGEROUS VIRUSES OR BACTERIA

TOXIC PESTICIDES AND DANGEROUS
ORGANISMS DUTY PAY

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TOXIC PESTICIDES AND DANGEROUS
ORGANISMS EXPOSURE PAY

I. PURPOSE. To provide an incentive to those Uniformed Services personnel for the performance of hazardous duty required by orders involving frequent and regular exposure to highly toxic pesticides or involving laboratory work that utilizes live dangerous viruses or bacteria.

II. DATA SOURCES. The information used in this analysis was obtained from the Services (including the National Institutes of Health and the Centers for Disease Control) in response to 5th QRM requests. Other sources of information include the Environmental Protection Agency, the Occupational Safety and Health Administration and the Office of Personnel Management.

III. HISTORICAL PERSPECTIVE. This Hazardous Duty Incentive Pay was first authorized in law by the Uniformed Services Pay Act of 1981 (Public Law 97-60). The addition of this category of hazard to Section 301, Title 37, U. S. Code came about as a result of DoD initiated legislation proposing that Service Secretaries be authorized to determine those duties within their respective departments which qualify for Hazardous Duty Incentive Pay. Included in the legislative proposal was a description of various duties for which the Services would consider authorizing special pay. Toxic pesticides and rabies diagnosis were two such categories. The House of Representatives' version of the Pay Act would have authorized such a provision, allowing the payment of Hazardous Duty Incentive Pay to members performing duties, as determined by the Secretary, to be either unusually hazardous or performed under unusually severe working conditions.¹ The Senate bill did not contain such a provision but did recommend the addition of four new categories of hazard pay including toxic pesticides and dangerous organisms. The Senate report stated:

This section recognizes the extensive personal sacrifices made by military members whose daily duties place them in imminent danger from hazards such as toxic, lethal, or carcinogenic substances or whose routine duties involve hazardous working conditions.²

The Senate version of the bill was approved in joint conference and toxic pesticides and dangerous organisms were added to Title 37 as categories qualifying for Hazardous Duty Incentive Pay.³

After extensive coordination among the Services, Executive Order 12420, dated May 11, 1983, implemented the provisions of the 1981 Pay Act with respect to highly toxic pesticides and live dangerous viruses or bacteria. Duty involving highly toxic pesticides was defined as fumigation tasks utilizing phosphine, sulfuryl fluoride, hydrogen cyanide, methyl bromide or other fumigants of comparable high acute toxicity and hazard potential.

The term "duty involving laboratory work utilizing live dangerous viruses or bacteria" was defined as duty performed by members working with microorganisms that:

1. cause disease with a high potential for mortality for which effective therapeutic procedures are not available; and
2. for which no effective prophylactic immunization exists, while such members are assigned by competent orders for a period of 30 consecutive days or more to participate in or conduct applied or basic research that is characterized by a changing variety of techniques, procedures, equipment, and experiments.⁴

Members qualifying for these pays receive compensation at the rate of \$110 per month for officers and \$83 per month for enlisted personnel.

IV. METHODOLOGY. These special pays were authorized only recently, and payment under this authority has not yet been made. An analysis of the effectiveness of these pays is, therefore, not feasible. However, this review will provide a descriptive base from which future analysis may draw. The first section of this paper will address the toxic pesticides portion of the pay, identifying the proposed recipients, the projected costs, and investigating the hazards associated with duty in the pesticides field. The second portion of the review will relate to the dangerous organism portion of the hazard pay and discuss its merits.

V. ANALYSIS.

A. TOXIC PESTICIDES. At the present time, only the Army and Air Force plan to utilize Toxic Pesticides Pay (TPP). The number of projected recipients along with estimated costs are shown in Table 1. These figures are expected to remain constant through fiscal year 1987.

Table 1
Projected Toxic Pesticides Pay Recipients and Costs
FY83 - FY87

<u>SERVICE</u>	<u>OFFICER</u>	<u>ENLISTED</u>	<u>ANNUAL COST (\$000)</u>
ARMY	2	2	5
AIR FORCE*	0	34	10 *
TOTAL	2	36	15 *

* Air Force cost estimate reflects payment of TPP to 34 personnel for only those months during which fumigation is expected to occur.

Army personnel expected to qualify for the TPP are Entomologists (68G) or Environmental Health Specialists (91S). Air Force recipients will primarily come from the Pest Management Specialist and Pest Manage-

ment Technician career fields. Volunteering is not a requirement for an assignment involving the handling of toxic pesticides. Thus, personnel could be involuntarily assigned to these duties in the normal course of a career in pest management.

To qualify for TPP, individuals must perform a fumigation task, during a given month, with one of the following pesticides: (1) phosphine, (2) sulfuryl fluoride, (3) hydrogen cyanide, (4) methyl bromide, or (5) a fumigant of comparable high acute toxicity and hazard potential. All of the above pesticides have been rated by the Environmental Protection Agency as being pesticides having high acute toxicities. In comparison, pesticides such as chlorodane and diazinon have been rated as having only medium acute toxicities.

While personnel doing fumigation work wear protective clothing and breathing apparatus, contamination by small amounts of these toxic chemicals are often unavoidable and may come in contact with the skin or be inspired or ingested. Some of the pesticides may be cumulative in effect, although conclusive documentation of the chronic effects of many pesticides has not been made. The possibility of severe exposure to these chemicals is always present, and experienced and knowledgeable personnel are required to ensure their safe application.

B. DANGEROUS ORGANISMS. The recently signed Executive Order pertaining to dangerous organisms allows receipt of the pay by personnel who conduct research with microorganisms which cause deadly disease for which neither immunization nor effective therapy exists. The hazard presented in this type work is obvious in the definition; the microorganisms must present a high potential for death, for which there is no effective prevention or cure. Under this wording of the Executive Order, none of the Services presently plan to use Dangerous Organisms Pay.

In coordinating the implementing Executive Order, there were differing opinions as to the restrictiveness that should be placed upon the pay. On one hand, it was believed that the pay should be defined to include laboratory workers at base level hospitals. This level of restriction would have allowed payment to a number of service personnel. On the other hand, several Services felt that there was not adequate justification for entitlement to the pay except in certain, very limited, cases and that the Executive Order should necessarily be restrictive in order to entitle only those personnel working with organisms requiring high hazard containment facilities to the pay. This would exclude those who work in routine, clinical, diagnostic or reference laboratory settings. It was believed that there are appropriate safeguards in all laboratories to protect employees against exposure to potentially lethal organisms and Hazardous Duty Incentive Pay should not be authorized where adequate safeguards exist. In short, there would be justification for Hazardous Duty Incentive Pay only in highly unusual situations.

An additional concern is the potential impact on the perceptions of the general public about the safety of laboratories if the federal government should pay hazardous pay to a significant number of personnel working therein.

Thus, we believe there is sound reasoning behind the wording of the current Executive Order implementing the dangerous organisms portion of this pay. While there are many organisms which present a risk of disease to humans, it is believed that the pay should reasonably be restricted to those situations where a greater risk is present than that encountered by most service personnel (including medical personnel who routinely treat diseased persons).

Although the Services have not yet identified recipients for the pay, it is reasonable to conclude, given the newness of the pay, that applications for its use may prove necessary in the future.

C. RATES. Personnel who qualify for Toxic Pesticides and Dangerous Organisms Pay will receive compensation at the rate of \$110 per month for officers and \$83 per month for enlisted personnel. For officers, this rate represents between 8% (0-2 over 2 years of service) and 4.5% (0-4 over 12 years of service) of basic pay, while for enlisted personnel it represents between 11% (E-3 over 3 years of service) and 6% (E-7 over 14 years of service) of basic pay.

A hazard differential can be authorized for Federal General Schedule workers for exposure to toxic chemicals or work with "materials of a micro-organic nature, which when introduced into the body are likely to cause serious disease or fatality and for which protective devices do not afford complete protection."⁵ The hazard differential is 25%. Federal Wage System employees can also receive an environmental differential for work with either toxic chemicals or dangerous microorganisms. Differentials are paid at the rate of 8% for high degrees of hazard and 4% for low degrees of hazard.⁶

A 1977 "Survey of Compensation Practices for Unusual Working Conditions" conducted by the Civil Service Commission found that among 111 companies employing personnel to handle or work with toxic chemicals, 18 paid some form of pay differential. Reported differentials varied widely and ranged from 5 cents per hour extra up to a maximum of 50% of the hourly wage. No one differential rate was predominant. Of forty companies who had employees working with microorganisms, 8 paid some sort of pay differential. Reported differentials ranged from 20 cents per hour extra to 6% hourly extra.⁷

VI. FINDINGS.

A. There is a need to provide special compensation to personnel performing duty involving highly toxic pesticides. Duty requiring the use of pesticides of high acute toxicity expose personnel to risks greater than those normally encountered by most Service personnel.

B. The current Executive Order governing the payment of Dangerous Organisms Hazardous Duty Incentive Pay provides reasonable criteria for receipt of this pay.

C. There is currently no demonstrated need to provide special compensation to personnel working with dangerous organisms; however, future applications for this pay may yet evolve.

D. No basis yet exists to evaluate the adequacy of the rates for these areas; however the rate should be consistent with other payments made for incentive purposes to those personnel required to continually expose themselves to uniquely hazardous conditions.

VII. RECOMMENDATIONS.

A. Continue Toxic Pesticides and Dangerous Organisms Exposure Pay (TP&DO).

B. The rate of TP&DO Pay should be consistent with the rates for other Hazardous Duty Incentive Pays.

References

1. H.R. 3380, 97th Congress, 1st Session, p. 5.
2. Senate Report No. 97-146 accompanying S. 1181, July 8, 1981, p. 7.
3. House of Representatives Report No. 97-265 accompanying S. 1181, October 6, 1981, p. 22.
4. Executive Order 12420, dtd. 11 May, 1983.
5. Federal Personnel Manual Supplement 990-2, Appendix E, "Background Information on Appendix A to Part 550," July, 1969.
6. Federal Personnel Manual Supplement 532-1, Appendix J, "Schedule of Environmental Differentials," April 14, 1980.
7. "Summary of Compensation Practices for Unusual Working Conditions," U.S.Civil Service Commission, 1977.

SUMMARY OF RESPONSES

Toxic Pesticides and Dangerous Organisms Exposure Pay

Issues:

1. Toxic Pesticides and Dangerous Organisms Exposure Pay (TP&DO) should be continued
2. The newness of the pay precludes specific findings concerning its effectiveness.
3. The rate of TP&DO pay should be consistent with the rates set for other Hazardous Duty Incentive Pays.
4. The current Executive Order governing the payment of the Dangerous Organisms portion of TP&DO Pay provides reasonable criteria for entitlement.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs but suggests flat rate of \$125/month.
Air Force	Does not concur with Issue 4. Believes that in developing the implementing Executive Order, OSD chose an excessively restrictive interpretation of the skills eligible for coverage.
Coast Guard	Concurs.
Public Health Service	Concurs.
NOAA Corps	Concurs.
JCS	Concurs.

LEGISLATIVE IMPLICATIONS

Toxic Pesticides and Dangerous Organisms Duty Pay

Amend 37 U.S.C. 301(c)(1) to reflect the increase in the enlisted rate by eliminating any reference to an enlisted rate and deleting the word "officer" in regard to the \$110 rate.

37 U.S.C. 301a
INCENTIVE PAY: AVIATION CAREER

AVIATION CAREER INCENTIVE PAY

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AVIATION CAREER INCENTIVE PAY

I. PURPOSE. To provide additional pay for aviation service so as to increase the ability of the Uniformed Services to attract and retain officer volunteers in an aviation career.

II. DATA SOURCES. The majority of data was provided by the Service Staffs of the Army, Air Force, Marine Corps and Navy. Additional material was obtained from the Coast Guard, Public Health Service, National Oceanic and Atmospheric Administration (NOAA) Corps, a number of military and civilian professional associations, and private sector businesses. Although not a primary source of data, extensive field interviews were conducted. Appendix A is a complete listing of these outside sources.

III. HISTORICAL PERSPECTIVE. The following is a chronological listing of related legislation and recommendations of applicable pay commissions. Appendix B contains a complete discussion of the reasoning behind these actions.

A. HAZARDOUS DUTY INCENTIVE PAY - FLIGHT PAY.

Public Law No. 62-401, 37 Stat. 707, March 2, 1913

- Army Officers
- detailed to fly heavier-than-air craft
- 35% of basic pay and allowances

Public Law No. 62-433, 37 Stat. 892, March 4, 1913

- Navy and Marine Corps officers
- same as above

Public Law No. 63-143, July 18, 1914

- Army only
- based on percentage of basic and "length-of-service" pay
 - military aviators (0-3 and above) - 75%
 - junior military aviators (0-2 and below) - 50%
 - student aviators - 35%
 - enlisted members - 50%

38 Stat. 939, March 3, 1915

- Navy and Marine Corps
- duty involving actual flying of "balloons, dirigibles and aeroplanes"
- based on percentage of basic and longevity pay
 - fully qualified aviators - 50%
 - student aviators - 35%
 - enlisted members - 50%

Act of May 18, 1920, Chapter 190, Section II

- made pay and allowances of naval officers applicable to Coast and Geodetic Survey officers (NOAA Corps subsequently covered by 37 U.S.C.)

Army Appropriation Act of June 4, 1920

- abolished aviator classes
- established 50% of basic and longevity pay for both officer and enlisted members

Joint Service Pay Act of 1922 (Public Law 67-235)

- set uniform flying pay rates of 50% of basic and longevity pay for all officers, warrant officers, and enlisted men of all branches of the Army, Navy, Marine Corps, and Coast Guard
- type of aircraft not specified
- directed establishment of uniform entitlement standards

Executive Order (E.O.) 3705-B of July 1, 1922

- 10 flights per month, or
- at least 4 flight hours per month

E.O. 4610 of March 10, 1927

- 10 flights must total at least 3 hours

1948 Advisory Commission on Service Pay (Hook Commission)

- introduced "incentive" as major element of Hazardous Duty Incentive Pays (HDIP)

Career Compensation Act of 1949 (Public Law No. 81-351)

- fixed pay structure based on pay grade
- highest amounts paid to "peak-usage" pay grades

1952 Commission on Incentive Hazardous Duty and Special Pays (Strauss Commission)

- recommended pay as percentage of basic pay to prevent depreciation of incentive value over time (not implemented)

1954 Appropriation Act

- exempted members with 20 years or more of aviation service from proficiency flying

Career Compensation Act of 1955

- increased rates set by Act of 1949
- introduced longevity step increments

1962 Appropriation Act

- extended excusal authority to aviators with 15 years or more aviation service, or remote assignments

1971 Appropriation Act

- extended flight pay to members in schools of ninety days or more who were prohibited from flying

1972 Appropriation Act

- restricted proficiency flying to members in anticipation of combat operation assignments
- authorized payment of flight pay to members assigned to non-flying jobs without regard to four hours a month rule

1973 Appropriation Act

- retained provisions of 1972 Act except terminated entitlement for O-6 and above in non-flying positions after 31 May 1973

B. AVIATION CAREER INCENTIVE PAY (ACIP).

Aviation Career Incentive Act of 1974

- eliminated officer crewmember flight pay authority under HDIP
- established Aviation Career Incentive Pay (ACIP) as separate entitlement
- provided for continuous incentive pay through the 'gate' system
 - must have performed 6 years operational flying by 12-year gate
 - must have performed at least 9 years of operational flying by 18-year gate
- realigned rate structure
 - based on both active service and aviation service
 - highest amounts to critical retention years
 - terminated payments by 25th year of active service (except warrant officers)

Military Compensation Act of 1980

- increased rates by 25% across-the-board

DoD Authorization Act of 1981

- established Aviation Officer Continuation Pay (AOCP)
- extended to officers who agreed to remain on active duty beyond initial obligation

Uniformed Services Act of 1981

- limited AOCP authority to Navy and Marine Corps
- held ACIP for AOCP recipients to Sep 81 levels while increasing ACIP for non-AOCP recipients of all branches
- greatest increase for "retention critical" aviators
- allowed ACIP payment on a monthly basis to O-6 and below with more than 25 years active service when actually performing regular flying duties

IV. METHODOLOGY. As previously mentioned, the purpose of ACIP is to attract and retain officer volunteers in an aviation career sufficient in numbers and quality. While AOCP has a somewhat related purpose, its role is to supplement ACIP when necessary. Therefore, it was not included in this analysis but was studied and reported separately.

There are several types of aeronautically designated/rated officers, the largest proportion being Pilots and Naval Flight Officers/ Navigators (NFO/NAVs). The primary function of these officers, both commissioned and warrant, is to accomplish the operational mission of the aircraft. Accordingly, they are expected to perform this function on a recurring basis throughout their careers. Since the function of, definition of and, perhaps more importantly, the requirement for aeronautically designated officers vary considerably by type, pilots and NFO/NAVs were each studied in terms of:

1. Validity of Purpose. Is an incentive pay necessary for the Services to attract and retain aviators in sufficient numbers and quality to meet their needs?

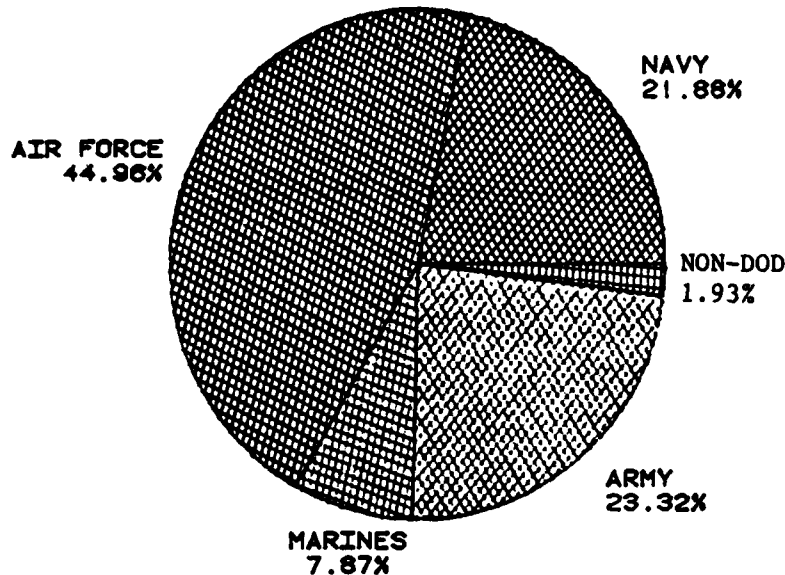
2. Creditability of Rates. Are the rates set at the minimum levels necessary to effect the desired behavior?

Emphasis was placed on the DoD pilot and NFO/NAV picture since, as can be seen in Figure 1, non-DoD pilots (there are no non-DoD NFO/NAVs) represent a very small percentage of the total Uniformed Services pilot inventory. Additionally, both the Coast Guard and NOAA have indicated that they neither have nor anticipate having aviator attraction or retention problems.

Figure 1

QUALIFIED PILOTS 1982

PERCENT OF TOTAL



WO-1 THROUGH O-5

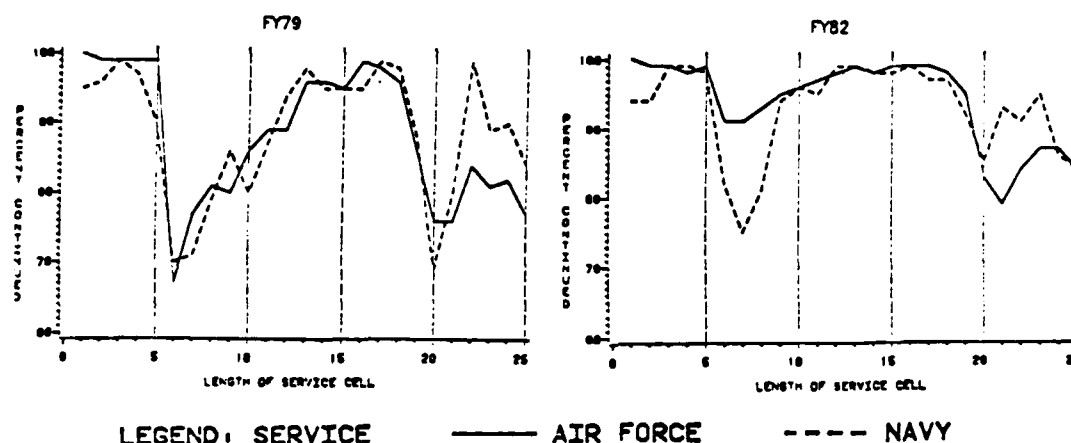
V. ANALYSIS.

A. CONTINUATION. For the purposes of this study, continuation rates are defined to be the probability that an individual who entered a given length of service (LOS) cell continues to the next LOS. An LOS cell is one year in length (e.g., greater than or equal to 6 years of commissioned service but less than 7). The rate is computed by dividing the number of people who were still in the inventory at the end of the year by the number of people in that LOS cell at the beginning of that year. By computing a continuation rate for each LOS from 1 to 30, career decision points can be identified.

An example of this technique is seen in Figure 2. Fiscal Years 79 and 82 were selected for this example, because they represent the worst and the best years in terms of pilot continuation, while the Air Force and the Navy reflect the greatest and least change between these years.

Figure 2

PILOT CONTINUATION RATES



In every case, the LOS 6 through LOS 10 window proved to be significant. This was no surprise, since this window commences immediately upon completion of the pilot's minimum service obligation incurred as a result of training. The fact that it terminates at a point where other considerations such as promotion opportunity, time invested toward retirement, etc., begin to affect continuation makes it an excellent indicator of the effectiveness of ACIP. Additionally, this period coincides with the time that the aviator's skills are most marketable in the private sector. Consequently, it was useful to calculate a continuation rate for this longer time interval. This rate was approximated by the product of the individual continuation rates, that is, the rate for the starting LOS cell was multiplied by the rate for each subsequent LOS cell in that interval. This continuation rate, therefore, is an estimation of the probability of completing the 10th year of service given that an individual enters the 6th year of service. Unless indicated otherwise, any further reference to continuation in this study pertains to this LOS interval. However, it should be noted that significant decision points also occur at LOS 20, and, until 1982, between LOS 10 and 13. The latter occurrence contradicts the common perception that the retirement program alone is sufficient to draw people through this window.

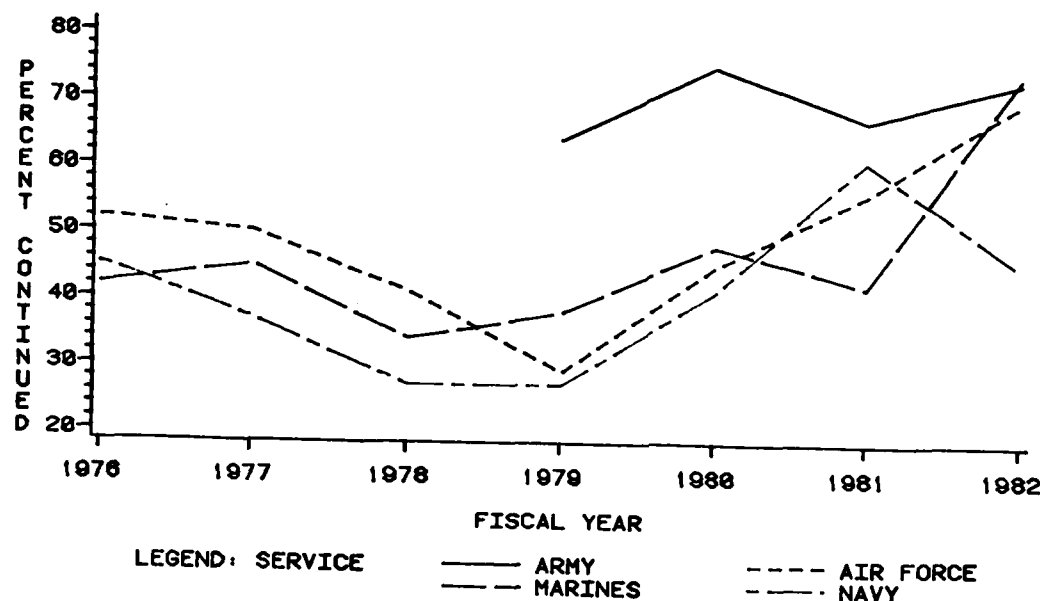
1. Pilots. Table 1 lists the continuation rates for DoD pilots from FY76 through FY82. Figure 3 displays the same data graphically. It is quite clear that pilot continuation was generally deteriorating from FY76 through FY79 and then began a general improvement. Army continuation rates have been routinely higher than those of the other

Table 1
DoD Pilot Continuation Rates
LOS 6-10

<u>FY</u>	<u>ARMY</u>	<u>NAVY</u>	<u>MARINE CORPS</u>	<u>AIR FORCE</u>
76	*	.45	.42	.52
77	*	.37	.45	.50
78	*	.27	.34	.41
79	.64	.27	.38	.29
80	.75	.41	.48	.45
81	.67	.61	.42	.56
82	.73	.45	.74	.70
* Not available				

Services. Additionally, they have fluctuated relatively little over time. Navy rates were considerably lower than all the other Services until 1981, at which time they exceeded all but the Army rates. It should be noted, however, that FY81 rates are probably artificially high, since they reflect the full implementation of Aviation Officer Continuation Pay (AOCP), a bonus program with an associated obligation which supplements ACIP. Officers in LOS 9 and 10 opted for the bonus at a rate of 98%, thereby causing the continuation rate for the 6-10 year window to be unrealistically high. These officers had moved through the window by FY82. It is believed that the resultant FY82 continuation rate is more representative of the true Navy pilot continuation behavior since it removes this first time surge effect. In all cases, FY78 - FY79 were especially poor years in terms of continuation.

Figure 3
AVIATOR CONTINUATION
 TYPE=PILOT



LOS 6-10

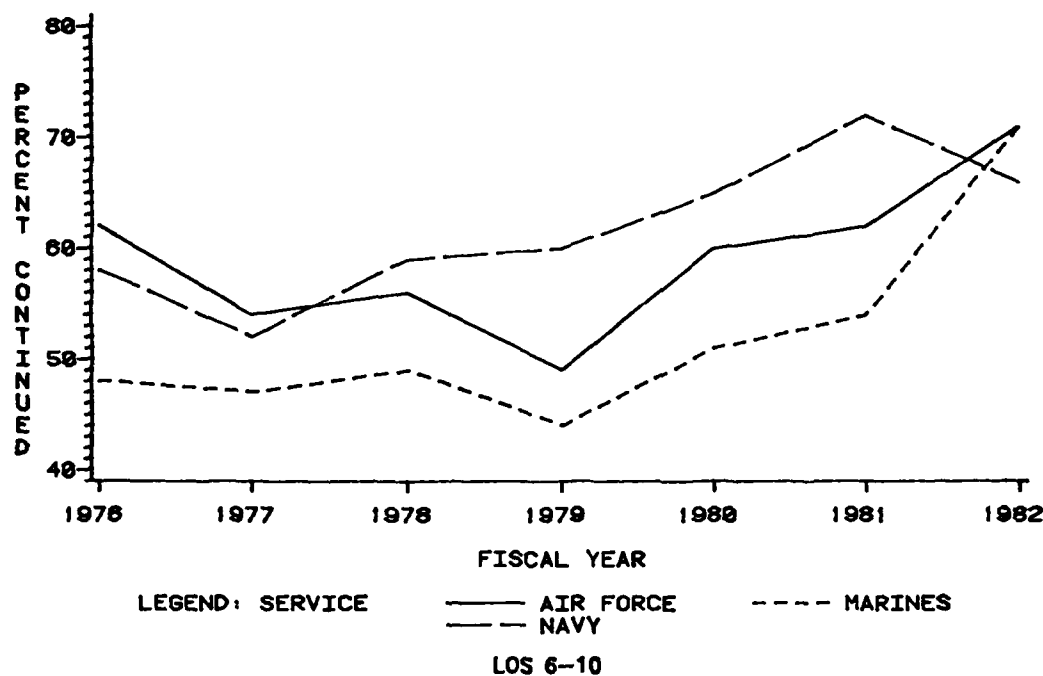
2. Naval Flight Officers/Navigators. Table 2 lists the continuation rates for NFO/NAV, while Figure 4 is a plot of these same values. Although their rates have been higher than those of their pilot cohorts, the general pattern is the same in that NFO/NAV continuation rates also "bottom out" in FY79 and the Navy NFO FY81 rates are believed to be artificially high. The large increase between Marine Corps NFO FY81 and FY82 continuation rates is due largely to a significant improvement in LOS 6 (from .75 to .93). Much of this change can be attributed to AOCp.

Table 2
NFO/NAV Continuation Rates
LOS 6-10

<u>FY</u>	<u>NAVY</u>	<u>MARINE CORPS</u>	<u>AIR FORCE</u>
76	.58	.48	.62
77	.52	.47	.54
78	.59	.49	.56
79	.60	.44	.49
80	.65	.51	.60
81	.72	.54	.62
82	.66	.71	.71

Figure 4

AVIATOR CONTINUATION TYPE=NFO/NAV

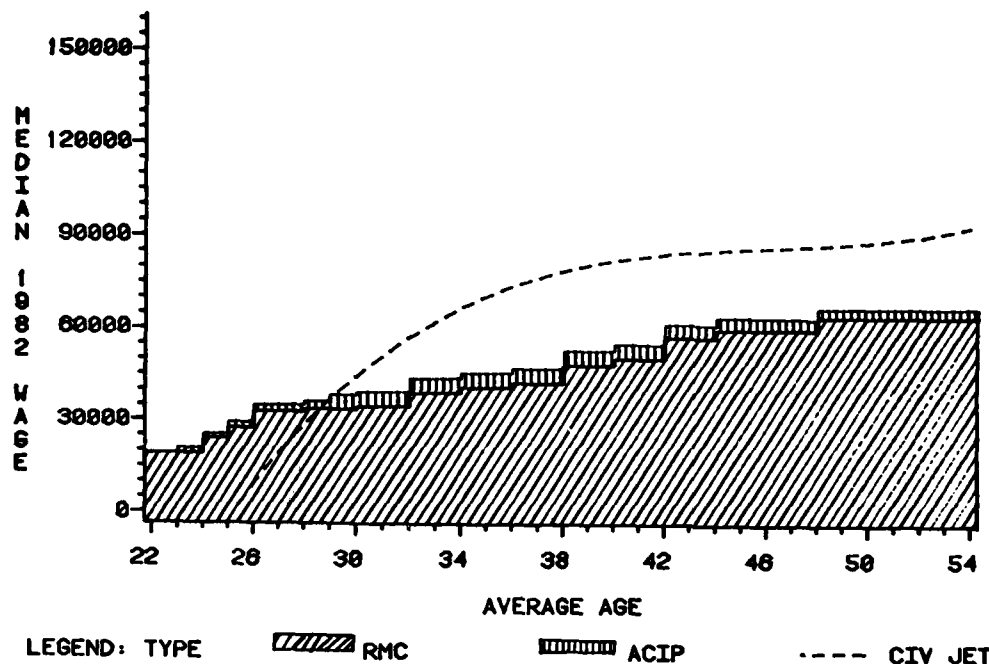


B. THE PRIVATE SECTOR. An understanding of the relationship between private-sector pilot hiring rates and military pilot continuation rates is essential in determining the extent to which changes in retention behavior can be attributed to outside forces and in predicting ACIP's ability to perform its function during periods of economic recovery. It should also be recognized that there are two separate groups, fixed-wing and helicopter pilots, for whom the private-sector draw is considerably different. DoD helicopter pilots are predominantly Army warrant officers with little or no college education and, due to the repetitive nature of their assignments, possess limited management experience. Hence, their civilian earnings potential, whether they enter the commercial aviation industry or not, is somewhat less than that of the typical commissioned pilot. Additionally, the aviation private sector draw itself is significantly different since the salaries in the helicopter industry are generally lower than those afforded fixed-wing pilots.

1. Fixed-Wing Pilots. While not all the pilots and few of the NFO/navigationers who choose to leave the Service are eventually employed by the commercial airlines, prevailing salaries in the industry are known to play a role in the individual's career decisionmaking process. Figure 5 represents the regressed median salary being earned by commercial airline pilots both (regional and trunk) in 1982 [1, 2, 3, 4] and the Regular Military Compensation (RMC) [5] plus ACIP being drawn by the due course commissioned officer pilot. As can be seen, ACIP appears to be appropriately targeted toward those years in which civilian jet pilot wages are most attractive (the rate of growth is the highest and the difference between military compensation and civilian salaries is the greatest). As was seen in the previous section, this period of time also coincides with the military pilot's critical career decision points.

Figure 5

1982 CIVILIAN PILOT WAGES* VS COMMISSIONED OFFICER PILOT RMC AND ACIP

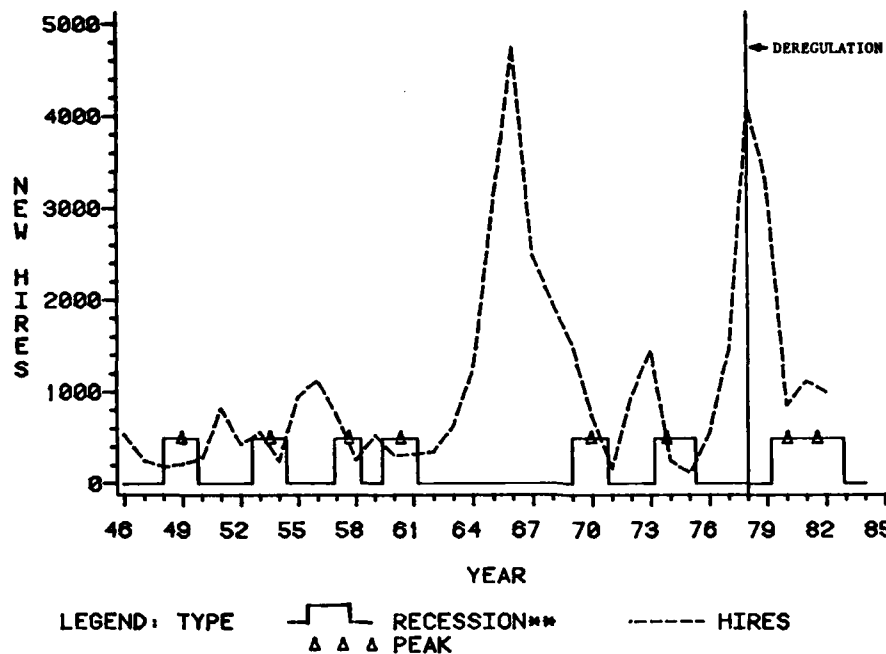


LEGEND: TYPE  RMC  ACIP  CIV JET
* SALARY DATA SOURCES: UNITED AIRLINES & PROF PILOT MAG, FAPA, & NBAA SURVEY 82

However, prevailing salaries are of consequence only if the industry is actually hiring new pilots. An examination of airline hiring rates between 1946 and 1982 [3] reveals that, as expected, pilot hiring activity is closely tied to economic conditions. There are several reasons for this. Flying for most consumers is usually associated with discretionary travel, e.g., vacations, conventions and business meetings, and is therefore often foregone during "hard times." Additionally, airline operating costs tend to increase due to rising fuel prices, high loan interest rates, and so on, during the same time that ridership is decreasing. These situations often result in a reduction in the frequency of some flights, the substitution of smaller aircraft or, on occasion, the elimination of previously established routes, thereby reducing the number of required crewmember positions. Figure 6 depicts this relationship, where the solid line represents the duration, although not necessarily the severity, of recognized recessionary periods. [6] Peak hiring levels coincide with the significant drops in military pilot continuation rates identified in Paragraph A.1.

Figure 6

AIRLINE PILOT HIRING*



* HIRING DATA SOURCE:
 FAPA UPDATE NEWSLETTER

** RECESSION DATA SOURCE:
 NATL BUREAU OF ECO RESEARCH

A correlation between historical airline pilot hiring, Table 3 and pilot continuation was computed in an effort to measure the presence and strength of a relationship between the two. The correlation coefficient is expressed in terms of a number between minus one (-1) and one (1). The closer the number is to the extremes, the stronger the relationship indicated. The resultant negative values recorded in Table 4 demonstrate that, in this case, the variables are inversely related, that is, as the hiring rate increased, the continuation rate decreased. In all cases except the Army, it shows that the variables have high predictive ability for each other. (The fact that the Army data are not highly correlated supports the previously stated premise that helicopter pilots, who comprise a large majority of the Army aviator community, are relatively unaffected by commercial airline industry hiring practices.) Further, comparison of the pre-1981 coefficients with the overall figures implies that this strong relationship is slightly deteriorating. This suggests that the recent compensation increases have had a positive affect on pilot continuation. However, an examination of the trends in the industry as a whole connotes that there are other factors to consider.

Table 3
Airline Pilot Hiring, 1975-1982

<u>Year</u>	<u>No. of New Hires</u>
75	113
76	547
77	1,446
78	4,113
79	3,271
80	851
81	1,116
82	1,050

Table 4
Correlations Between Pilot Continuation
and Airline Hiring

<u>Service</u>	<u>Period</u>	
	<u>Through 1982</u>	<u>Pre-1981</u>
Air Force	-.654	-.738
Army	-.210	*
Navy	-.828	-.933
Marine Corps	-.700	-.860

*Insufficient Data

Table 5 describes the general characteristics of new commercial pilot hires between November 1978 and December 1982 in terms of age and type of previous aviation experience. [3] As can be seen, the age range of new hires is becoming considerably broader, and the percentage

Table 5
Commercial Pilot Hires
Demographic Comparison

<u>Period</u>	<u>Age</u>		<u>Type of Experience</u>			<u>Sample Size</u>		
	<u>Range</u>	<u>Median</u>	<u>% Civ Only</u>	<u>% Mil Only</u>	<u>% Both</u>	<u>Total Hires</u>	<u># in Sample</u>	<u>% of Total</u>
78-79*	21-39	30.0	32	44	24%	2208	1003	45%
1980	21-47	29.6	17	23	60%	851	383	45%
1982	22-55	32.1	48	17	35%	1050	352	33%

*11/78 through 04/79

of pilots having only military flying experience is significantly smaller than in 1979. Probable reasons for these changes are:

1. Since airline deregulation during October 1978, most hiring activity has been done by the relatively smaller regional and newly formed airlines, which, because of rapid growth, have been hiring at other than entry level (e.g., captain versus second officer). This has resulted in greater emphasis on previous airline experience than has been true in the past.

2. During recent recessionary periods numerous experienced airline pilots were furloughed, creating a large, readily available source from which these airlines could draw.

3. Increases in the military compensation package have encouraged continuation, thereby reducing the number of "military only" pilot inputs to the marketplace.

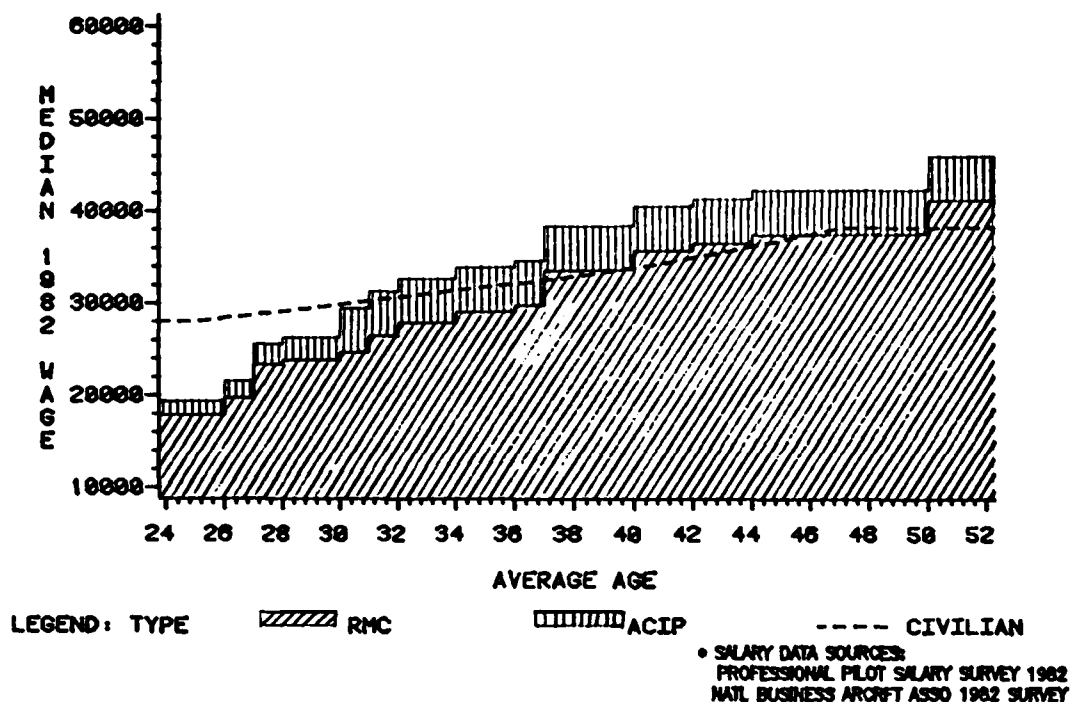
This trend will probably continue through the next four to five years. Union contracts require parent companies to recall their furloughed pilots (approximately 4,200 currently on furlough) prior to acquiring new hires. The Federal Aviation Administration (FAA) forecasts that the regional airlines will grow at a faster rate between FY 83 and FY 94 than the majors. [7] Therefore, even though it appears that the economic picture for the major carriers is getting brighter, it will be some time before they again serve as a significant draw for the military pilot. Additionally, new hires may not keep pace with economic growth due to the introduction of the new, more fuel-efficient aircraft which possess equal or greater passenger capacity but require fewer flight officers. The Boeing 757, designed to be flown by two versus the usual three officers, is an example of such an aircraft. Finally, a recent Department of Labor proposal would give those pilots who lost their jobs due to the bankruptcy of their parent company "first-hire" rights if the failure of the airline can be attributed to deregulation. Although this proposal is not yet law, most airlines have already instituted this policy. The pool is currently between 1,800 and 1,900 pilots. Major airlines will probably again start to attract new hires in significant numbers no later than 1990. By that time, the furloughed pilot and "first hire" pools should be depleted, while at the same time nearly 15,000 pilots in excess of these sources will have reached mandatory retirement age. [3] Assuming no growth, which is contrary to all indicators, at least this number of hires can be expected. The Services were able to absorb the huge losses which occurred during the most recent period of high airline hiring activity, 1978-1980, because of post-Vietnam inventory excesses. That buffer no longer exists. This, coupled with the fact that there is no obligation associated with the receipt of ACIP, means that the Services may experience degradation of readiness should the hiring patterns of the late seventies be repeated. As was seen in Figure 5, a great disparity between civilian pilot salaries and military pilot RMC plus ACIP still exists.

2. Helicopter Pilots. As previously mentioned, the private-sector helicopter pilot median salary [2, 4] is considerably lower than that of the fixed-wing (commercial airline) pilot. In fact, as can be seen in Figure 7, with the recent increases in ACIP, it is very much in line with that of the typical military helicopter pilot, an Army Warrant Officer. The next question then becomes whether one should expect this relationship to hold.

Figure 7

1982 CIVILIAN HELO PILOT WAGES*

VS WARRANT OFFICER PILOT RMC AND ACIP



During 1982, Embry-Riddle Aeronautical University, under the auspices of Helicopter Association International (HAI), conducted a survey of HAI member companies which operate helicopters, 213 responded. [9] It is evident from this survey that, while there was a general decline in helicopter pilot hiring, ranging from 20-50% in 1982, the demand for these pilots is expected to increase significantly. For example, 52% of the respondents currently operate 5 or more rotary aircraft, but 64% anticipate utilizing at least that many by 1989. Additionally, between 60% and 80% of the companies reported that they would need at least one new pilot in any given year between 1982 and 1989. Clearly, in absolute terms this represents a relatively insignificant number;

however, it is an indication of a growing trend in the industry. New areas of business, such as city-center to city-center transportation, aeromedical evacuation, law enforcement, construction, heavy forestry and logging, TV and news coverage, animal control and commercial fishing, will increase demand for both helicopter pilots in general and, because of more advanced engineered rotorcraft, for better educated pilots. The law of supply and demand should take effect and force salaries for helicopter pilots upward, although probably not to the level of commercial airline pilot salaries.

C. INVENTORY VS. AUTHORIZATIONS. A knowledge of the structure of pilot and NFO/NAV authorizations and inventory by Service is essential to determine whether the Services are in fact meeting their aviator manning objectives in both numbers and level of experience/quality. For the purposes of this study, inventory is defined as the aggregate of all individuals qualified in the given skill, whether or not actually assigned in that skill. For example, an Air Force pilot assigned to a rated supplement position is counted in the pilot inventory, while an individual trained as a pilot but permanently disqualified from flying due to medical or other reasons is not included in the pilot inventory. An authorization, on the other hand, is an actual position which must be filled by an aviator. These include primary aircrew positions, air and training staffs, and a sufficient number of general positions to support aviator surge/drawdown.

This section of the analysis concentrates on grades 0-1 through 0-5 since these are the most flight intensive years. It should also be noted that, unlike the private sector which can hire individuals at whatever experience level a vacancy occurs, the Uniformed Services have closed systems. This means that they can "hire" only at entry level and then must "grow" their inventory to meet their future needs. For this reason, long-term planning often results in short-term inventory to authorization imbalances. Likewise, it is not possible to reshape long-term force profiles for significant short-term changes. A healthy situation exists, therefore, when inventory actually exceeds authorizations. Such a circumstance allows for in-transit time, for career broadening assignments designed to improve the officers' leadership and decision-making abilities and for ensuring that the operational force is the appropriate mix of length and type of experience.

1. Navy. Tables 6 and 7 present the Navy pilot and NFO inventory-to-authorization ratios between FY77 and FY82 and projections for FY83 through FY87. Assuming that a one-to-one relationship between inventory and authorizations (or 100%) is the minimum acceptable level, the Navy has yet to achieve even minimal pilot manning. In the case of 0-3, the shortfall has been even greater, ranging from 5% to 34% below needs. The NFO community has experienced a similar though much less severe pattern. An examination of the total manning levels reveals a general upward trend. But why is this happening? Between FY77 and FY82 pilot authorizations decreased 11% while pilot inventory was reduced 5%, resulting in a more favorable inventory-to-authorization ratio.

During the same timeframe NFO authorizations increased by 5%. This was caused largely by personnel policy changes which opened many positions that were once exclusively pilot assignments to NFO's. However, a concurrent 14% rise in the NFO inventory offset this authorization increase. The Navy projections indicate a 16% increase in pilot authorizations and a 9% increase in inventory between FY82 and FY87. Consequently, the Navy pilot's unfavorable inventory-to-authorization ratio is expected to continue at least through FY87. The NFO projections reflect an 11% increase in authorizations with a concurrent 13% increase in inventory.

Table 6
Navy Pilot Inventory-to-Authorization Ratios

GRADE															
0-1/0-2				0-3			0-4			0-5			TOTAL		
FY	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%
77	3458	3379	102	4174	4372	95	2371	2915	81	1726	1929	89	11729	12955	91
78	3336	3024	110	3580	4180	86	2454	3027	81	1576	1746	90	10946	11977	91
79	3366	2980	113	3033	4317	70	2547	2918	87	1421	1770	80	10367	11985	86
80	3165	3009	105	2922	4457	66	2564	2927	88	1390	1790	78	10041	12183	82
81	3526	3055	115	3030	4557	66	2566	2959	87	1416	1828	77	10538	12399	85
82	3790	3418	111	3220	4026	80	2546	2515	101	1545	1635	94	11101	11594	96
83	3628*	3695	98	3153	4349	72	2584	2542	102	1551	1592	97	10916	12178	90
84	3740*	3753	100	3316	4385	76	2519	2600	97	1662	1611	103	11237	12349	91
85	3972*	4131	96	3494	4665	75	2507	2677	94	1726	1644	105	11699	13117	89
86	3976*	4161	96	3711	4761	78	2530	2700	94	1726	1655	104	11943	13277	90
87	4006*	4222	95	3913	4830	81	2526	2725	93	1707	1666	102	12152	13443	90

*Assumed 0-1 inv = projected 0-1 auth

*Assumed 0-1 INV = Projected 0-1 AUTH

Table 7

Navy NFO Inventory-to-Authorization Ratios

FY	0-1/0-2			0-3			0-4			0-5			TOTAL		
	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%
77	1980	1831	108	1659	1889	88	945	993	95	309	490	63	4893	5203	94
78	1680	1782	94	1743	1963	89	965	1076	90	363	443	82	4751	5264	90
79	1620	1734	93	1674	1892	88	1074	1072	100	426	452	94	4794	5150	93
80	1793	1773	101	1713	1903	90	1128	1088	104	303	434	111	5137	5218	98
81	1976	1809	109	1779	1895	94	1160	1115	104	531	478	111	5446	5297	103
82	2057	1869	110	1739	1750	99	1236	1094	113	563	744	76	5595	5457	103
83	1730	1858	93	1809	1843	98	1304	1097	119	554	699	79	5397	5497	99
84	1759	1912	92	1931	1889	102	1364	1121	122	578	704	82	5632	5626	100
85	1867	2040	92	2040	1943	105	1431	1147	125	596	709	84	5934	5839	102
86	1877	2087	90	2143	1977	108	1499	1162	129	607	714	85	6126	5960	103
87	1892	2113	90	2275	2035	112	1539	1168	132	615	718	86	6321	6034	105

A number of factors impact on the inventory of any force: accession rates, both planned and achieved, and continuation behavior, the career decisionmaking process of the individual. Table 8 lists the number of programmed graduates versus actual graduates from pilot and NFO training for FY75 through FY82. As can be seen, the Navy experienced serious pilot training rate (PTR) shortfalls in FY77-FY80. In an effort to quantify the impact of that occurrence, cohort continuation rates were applied to the number of graduates who were programmed but not achieved in those years. The resulting inventory distribution is displayed in Table 9. Assuming that they were all due-course officers, the Navy 0-3 pilot inventory would have been 536 stronger had these pilots been accessed as planned. This increase would have driven the FY82 0-3 inventory-to-authorization ratio of 80% to 93%. Clearly, if accession goals are not achieved, the continuation of the existing inventory becomes more critical.

Table 8
Navy Pilot/NFO Training Rates

FY	PILOT		NFO	
	PROGRAMMED	ACTUAL	PROGRAMMED	ACTUAL
75	976	924	486	426
76	920	904	460	422
77	225	217	115	119
77	900	744	440	442
78	800	597	460	425
79	885	532	450	409
80	885	892	450	451
81	897	893	470	463
82	957	945	515	519

Table 9
Additional Navy Pilots Assuming
FY77 - FY80 PTR Goal Achievement

LOS	Fiscal Year					
	77	78	79	80	81	82
1	126	173	335	-	-	-
2	-	116	166	301	-	-
3	-	-	115	159	296	-
4	-	-	-	112	156	293
5	-	-	-	-	109	153
6	-	-	-	-	-	90
TOTAL	126	289	616	572	561	536

2. Marine Corps (USMC). Table 10 gives the USMC pilot inventory-to-authorizations matrix. Applying the premise that 100% is the absolute minimum acceptable ratio, it becomes quite clear that the USMC is and has been experiencing a severe pilot shortfall at the lieutenant (O-1/ O-2) level. Although the lieutenant inventory has increased 24% since FY77 and authorizations have decreased 9%, the lieutenant inventory-toauthorization ratio is still only 71%. Even if all company grade pilots (O-3 and below) were considered to be a single distributable cell, an action which would manage a pilot with one year of aviation service in the same manner as one with 9 years' experience, this ratio remains below 90%.

Table 10
Marine Pilot Inventory-to-Authorization Ratios

FY	0-1/0-2			0-3			0-4			0-5			TOTAL		
	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%	INV	AUTH	%
77	942	1747	54	1348	1182	114	724	743	97	446	347	129	3460	4019	86
78	738	1610	46	1250	1110	113	896	698	128	395	326	121	3280	3744	88
79	765	1652	46	1194	1120	107	841	696	121	413	327	126	3213	3795	85
80	740	1690	44	1212	1120	108	918	702	131	411	329	125	3281	3841	85
81	999	1595	63	1194	1104	108	921	780	118	424	388	110	3538	3867	91
82	1167	1642	71	1246	1104	113	954	751	127	437	355	123	3804	3852	99
83	1311	1670	79	1315	1125	117	915	770	119	441	355	124	3982	3920	102
84	1332	1670	80	1335	1130	118	929	771	120	448	357	125	4044	3928	103
85	1350	1701	79	1354	1151	118	942	783	120	453	361	125	4099	3996	103
86	1373	1713	80	1377	1168	118	957	802	119	462	368	126	4169	4050	103
87	1393	1709	82	1397	1169	120	973	799	122	468	368	127	4231	4044	105

Lieutenants are all performing their minimum service obligations; therefore, this shortfall is more a function of accession rates than of continuation. Consequently, the compensation system plays a more indirect role (that of attraction) for this group of officers than for their more senior counterparts. An examination of USMC pilot training rates (PTR) for FY77 through FY82, Table 11, reveals that the Service's failure to meet its PTR goals is a major factor contributing to the shortfall. By assuming that the USMC achieved their planned PTR in those years where the shortfall exceeded 25% (FY78 and FY79) and then applying cohort continuation rates, the FY82 pilot inventory is increased by 312 officers, 208 of whom are at the 0-2 level. However, these additional pilots would increase the lieutenant inventory-to-authorization ratio to only 84%. The USMC would have had to achieve their planned PTR for every year since FY77 and have retained nearly 100% of these officers to have met their FY82 company grade pilot authorizations. It appears that not only has the USMC failed to achieve their PTR goals but that the goals themselves were too low. Total pilot authorizations are projected to increase 5% by FY87, with 55% of these increases occurring at the already short company grade level. The projected training seats are insufficient to support these increases, therefore, the pilot company grade shortfall will continue to exist. Additionally, since over 70% of the authorizations are now and are projected to continue to be at the company grade level, an increase in the training base would exacerbate the current field grade inventory-to-authorization imbalance.

Table 11
Marine Corps Planned and
Achieved Pilot Training

<u>FY</u>	<u>Planned</u>	<u>Actual</u>
77	435	425
78	382	269
79	470	253
80	460	395
81	500	504
82	500	482
83-84	480	*
85-87	500	*

*not applicable

The NFO picture is somewhat different. Table 12 reflects the inventory-to-authorization ratio for the Marine NFO. At first glance, one would believe that the NFO community is suffering serious lieutenant shortfalls and is just barely meeting its O-3 needs. However, the Marine Corps is engaged in a 10-year transition period to three new aircraft. One, the F/A-18, will eventually replace the F-4, thereby reducing the NFO requirement 29% by FY87. Accordingly, the NFO lieutenant inventory shortfall has largely been the result of planned training reduction by the USMC. This becomes quite evident when one reviews Table 13, the programmed and achieved NFO graduates for FY75 through FY87.

Table 12
Marine NFO Inventory-to-Authorization Ratios

<u>GRADE</u>															
<u>O-1/O-2</u>				<u>O-3</u>			<u>O-4</u>			<u>O-5</u>			<u>TOTAL</u>		
<u>FY</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>
77	289	291	99	257	247	104	97	124	78	14	66	21	657	728	90
78	243	304	77	280	286	98	139	141	99	15	76	20	677	807	84
79	231	350	66	291	292	100	142	144	99	19	77	25	683	863	79
80	203	361	56	303	288	106	161	141	114	27	76	36	694	866	80
81	206	369	56	286	250	114	162	147	110	42	57	74	696	823	85
82	178	353	48	259	246	105	175	143	122	48	53	91	660	795	83
83	212	317	67	252	219	115	148	131	113	35	49	71	647	716	90
84	155	318	49	293	217	135	143	130	110	34	48	71	625	713	88
85	100	284	35	327	204	160	136	124	110	32	46	70	595	656	91
86	100	249	40	308	171	180	130	105	124	30	38	79	568	564	101
87	100	249	40	291	171	170	124	105	118	29	38	76	544	564	96

Table 13
Marine NFO Training Rate

<u>FY</u>	<u>Planned</u>	<u>Actual</u>
75	130	100
76	125	91
7Q	25	25
77	100	93
78	100	105
79	100	100
80	82	82
81	55	55
82	40	44
83	40	*
84	40	*
85-87	30	*

*Not applicable

3. Army. As previously discussed, the Army aviation community is comprised of two distinct populations, commissioned officer pilots and warrant officer pilots. Each community is managed differently and, therefore, must be viewed as a separate entity.

a. Commissioned Officers. Company grade officers (O-1 through O-3) receive maximum utilization in aviation assignments through their eighth year of commissioned service. By this point in their careers, all officers have an additional specialty designated. Thereafter, they, along with all field grade (O-4 and above) officers, are managed in accordance with the Army's dual specialty development system. Table 14 presents their inventory-to-authorization ratio. Contrary to the practice of other Services, an Army officer often enters the aviation program at the O-2 level. This procedure results in very little deviation between the experience level of an O-1 pilot and an O-3 pilot. Consequently, company grade and field grade officers are considered in the aggregate.

The Army has not experienced a pilot manning problem to any great extent; however, company grade shortfalls did exist prior to FY81. This was largely the result of the relatively low PTR between FY77 and FY80 (Table 15) and not a function of undesirable continuation; i.e., all of these officers are within their minimum service obligations. Although company grade officer authorizations are projected to increase 9% between FY82 and FY87, the planned PTR adjustment should be sufficient to sustain the inventory at acceptable levels. The Army dual specialty system recognizes that very few requirements exist for aviators at the field grade level (less than 30% of the total pilot authorizations) and, therefore, ensures that, although the authorization structure supports

only 34% utilization for these officers in aviation, they possess additional skills for which there are valid authorizations. This creates a buffer so that continuation rates would have to drop to pre-ACIP levels before the Army would experience any commissioned pilot manning problems.

Table 14
Army Pilot Inventory-to-Authorization Ratios
Commissioned Officers

<u>FY</u>	<u>Company Grade</u>			<u>Field Grade</u>			<u>Total</u>		
	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>
79	2753	2949	93	4283	1056	406	7036	4005	176
80	2423	3012	80	4357	1056	413	6780	4068	167
81	2810	2849	99	3443	1173	294	6253	4022	156
82	2993	2962	101	3779	1189	318	6772	4151	163
83	3445	2913	118	3237	1211	267	6682	4124	162
84	3613	2931	123	3236	1182	274	6849	4113	167
85	3789	2946	129	3216	1185	271	7005	4131	170
86	4001	3070	130	3099	1198	259	7100	4268	166
87	4233	3234	131	2856	1235	231	7089	4469	159

Table 15
Army Commissioned Pilot PTR

<u>FY</u>	<u>PLANNED</u>	<u>ACTUAL</u>
77	135	138
78	260	260
79	350	350
80	465	503
81	598	617
82	598	624
83-87	598	*

*Not Applicable

b. Warrant Officers. This group of pilots is managed as a single cell; therefore, their respective inventory and authorizations recorded in Table 16 are not expressed in terms of pay grade. Warrant Officer aviators are neither required nor desired to participate in career-broadening assignments. They are exclusively pilots; consequently, the 100% inventory-to-authorization ratio becomes a desired level of manning for this community rather than a minimum. Unlike their commissioned counterparts, these pilots were in short supply until FY81. However, since FY79 their inventory has increased at a higher rate than authorizations, 10% and 4%, respectively. This has been a result of the improved continuation rates, as was seen in Table 1, and increased warrant officer PTR, displayed in Table 17. Projections indicate that should this trend continue, the Army warrant officer program could actually be in danger of being overmanned. This is a healthy situation, since the Army could reduce the training pipeline costs or take other force management actions to "shape" the inventory in terms of grade and experience without negatively impacting its future needs.

Table 16
Army Pilot Inventory-to-Authorization Ratios
Warrant Officers

<u>FY</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>
77	*	5690	-
78	*	5690	-
79	4936	5705	87
80	4900	5838	84
81	5172	5754	90
82	5428	5905	92
83	6516	5961	109
84	6926	5986	116
85	7208	6118	118
86	7357	6356	116
87	7443	6494	115

*Not available

Table 17
Army Warrant Officer PTR

<u>FY</u>	<u>PLANNED</u>	<u>ACTUAL</u>
77	120	123
78	465	488
79	465	488
80	632	597
81	808	857
82	808	816
83	898	*
84	1000	*
85	1000	*
86	1000	*
87	1000	*

*Not applicable

4. Air Force. It is clear from examination of the Air Force pilot inventory and authorizations for FY77 to FY82 (Table 18) that this Service has been involved in a major restructuring effort. Field grade (O-4 and O-5) authorizations decreased 15% each, and lieutenant authorizations (O-1 and O-2) increased 27%, while pilot authorizations overall remained relatively constant (increased by only 2%). Much of this restructuring appears to be related to programmed end strength reductions following the cessation of the Vietnam Conflict. Relatively low pilot production rates caused a grade imbalance (Table 19). In FY77, 67% of both the inventory and the authorizations were at company grade (O-1 to O-3) level. However, by FY82, only 60% of the inventory was company grade, compared to 73% of the authorizations. For this reason, the FY82 pilot inventory-to-authorization ratio for company grade officers is only 83%, an alarming 59% for O-1/O-2 pilots.

Table 18
Air Force Pilot Inventory-to-Authorization Ratios

<u>FY</u>	<u>O-1/O-2</u>				<u>O-3</u>			<u>O-4</u>			<u>O-5</u>			<u>TOTAL</u>		
	<u>INV</u>	<u>AUTH</u>	<u>Z</u>		<u>INV</u>	<u>AUTH</u>	<u>Z</u>	<u>INV</u>	<u>AUTH</u>	<u>Z</u>	<u>INV</u>	<u>AUTH</u>	<u>Z</u>	<u>INV</u>	<u>AUTH</u>	<u>Z</u>
77	3865	5496	70		13681	9512	144	4464	4427	101	4362	2955	148	26372	22390	118
78	3164	5401	59		13096	8748	150	4579	4108	101	4074	2754	148	24913	21011	119
79	2540	7457	34		11288	8727	129	4955	3865	128	3688	2651	139	22471	22700	99
80	3039	6705	45		10186	8958	114	5140	3740	137	3531	2533	139	21896	21936	100
81	3643	6959	52		9905	9224	107	5243	3813	138	3506	2483	141	22297	22479	99
82	4122	6969	59		9598	9598	100	5546	3761	147	3548	2483	143	22814	22820	100
83	4635	6874	67		9307	9660	96	5693	3809	149	3777	2452	154	23502	22795	103
84	5139	6834	75		9191	9917	93	5859	3866	152	3867	2506	154	23738	23123	104
85	5184	7072	73		8886	9940	89	6083	3857	158	3990	2475	161	23846	23344	103
86	5275	7108	74		8749	10006	87	6141	3884	158	4112	2487	165	24101	23485	103
87	5321	7180	74		8485	10128	84	6289	3931	160	4254	2518	169	24295	23757	103

Table 19
Air Force Pilot Training Rates

<u>FY</u>	<u>Programmed* Entries</u>	<u>Actual/Projected Graduates</u>
77	1189	1316
78	1168	1084
79	1747	1047
80	2091	1543
81	2414	1693
82	2375	1875
83	2272	2000
84	2404	2000
85	2407	2000
86	2416	2100
87	2416	2100

*Contains an attrition factor

The total pilot ratio of 100% indicates that there are sufficient pilots to meet current operational commitments only. In addition, because field grade officers must make up company grade pilot shortfalls, there is very little room, for advanced education or career-broadening experiences which provide for executive development. Although training rates are increasing and improvement is expected, projections reveal that this situation will probably continue through FY87.

A restructuring of the navigator authorizations has also occurred, but to a considerably lesser degree. Table 20 shows that the greatest changes, a 10% increase and a 10% decrease, occurred at the O-5 and O-3 levels, respectively. However, there was a concurrent 18% decrease in inventory. This decrease, coupled with a low accession rate (Table 21), has resulted in an overall inventory-to-authorization ratio of only 98%.

Table 20
Air Force Navigator Inventory-to-Authorization Ratios

<u>FY</u>	<u>GRADE</u>												<u>TOTAL</u>		
	<u>O-1/O-2</u>			<u>O-3</u>			<u>O-4</u>			<u>O-5</u>			<u>INV</u>	<u>AUTH</u>	<u>%</u>
	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>	<u>INV</u>	<u>AUTH</u>	<u>%</u>
77	2454	2831	87	4763	4891	97	2577	2048	126	2452	727	337	12246	10497	117
78	1786	2875	62	5156	4715	109	2307	1989	116	2338	755	310	11587	10334	112
79	1689	3456	49	4190	3999	105	1996	2024	99	2099	802	262	10697	10281	104
80	1691	3040	56	4706	4170	113	1855	1997	93	1873	847	221	10125	10054	101
81	1856	3081	60	4634	4355	107	1797	1968	91	1715	843	203	10022	10247	98
82	2103	3007	70	4529	4426	102	1839	1969	93	1548	802	193	10019	10253	98
83	2511	3068	82	3187	4332	97	2148	1895	113	1426	771	185	10272	10066	102
84	2808	3090	91	3914	4411	89	2339	1911	122	1329	778	171	10390	10190	102
85	2896	2991	97	3637	4298	85	2701	1847	146	1165	756	154	10399	9892	105
86	2489	3017	82	3917	4228	93	2931	1852	158	1105	757	146	10442	9854	106
87	2495	3035	82	3771	4254	89	3102	1850	168	1130	758	149	10498	9900	106

Table 21
Air Force Navigator Training Rates

<u>FY</u>	<u>Programmed *</u> <u>Entries</u>	<u>Actual/Projected</u> <u>Graduates</u>
77	709	653
78	544	472
79	690	594
80	706	609
81	784	683
82	968	857
83	1035	1000
84-87	1035	900

* Contains an attrition factor

Unlike their pilot counterparts, the navigator grade balance has actually become more favorable. In FY77, 59% of the inventory was company grade officers compared to 74% of the authorizations. By FY82, this relationship had improved to 66% and 73%, respectively. Projections indicate that the community's health will continue to improve. The inventory-to-authorization ratio is anticipated to reach 109% by the end of FY87. Although this is a favorable situation, as in the case of all commissioned aviators, such a circumstance still leaves little flexibility in terms of force management.

D. COST/BENEFIT. There are two aspects of this issue: the cost of the program itself, that is, ACIP dollar outlays; and the cost of replacing those aviators who were lost. The difference between the two represents the actual cost/benefit of the program.

It can be argued that training cost is not a true measure of the replacement cost of an individual, since it assumes that the newly trained officer, who is often less than 75% combat capable, is equal in value to the one that was lost. In the case of a pilot or NFO/NAV, the lost officer possesses a minimum of five years of aviation experience. However, a recognized methodology for computing the cost of experience has yet to be developed; therefore, the training cost presented herein should be considered minimum replacement cost.

Costs vary considerably by type of aircraft and the specialized mission of the given Service, which in turn dictates the length and content of the training syllabus. For example, it is more expensive to train a jet pilot than a helicopter pilot, while it costs less to train an Air Force C-130 Navigator than an NFO Radar Intercept Officer (RIO), because a Navigator in the Air Force does not perform the same function as a Navy RIO. Consequently, training costs contained in Table 22 are weighted averages for the given aviation community. The weighting factors used represent the proportion of the manpower resources the

skill comprises (e.g., if 80% of the fixed-wing inventory are jet pilots while only 20% are turboprop pilots, the training cost of a fixed-wing pilot was weighted accordingly). For these reasons, the weighted average cost for training the same type of aviator cannot be compared across Service lines. Actual costs range from a high of \$1,533,752 for an FB-111 pilot to a low of \$95,103 for a C-141 navigator. Assuming current levels hold, the cumulative amount of ACIP which can be drawn over 25 years of aviation service is approximately \$100,000. Clearly, in 1982 dollars alone, the cost of retaining an experienced aviator by means of ACIP is significantly less than the cost of training a replacement.

Table 22
Aviator Weighted Average Training Costs*
(rounded to nearest thousand)

<u>Type Aviator</u>	<u>Air Force</u>	<u>Navy</u>	<u>Army</u>	<u>Marine Corps</u>
Pilots				
Fixed-Wing	\$701,000	\$962,000	-	\$439,000
Helicopter	\$119,000	\$240,000	\$120,000	\$216,000
NFO/NAV	\$112,000	\$581,000	-	\$375,000
*All costs equal less than 100% combat capable, Marine Corps 60%.				

Another way the cost effectiveness of ACIP was measured was by determining the number of aviators who could have been trained for the same dollar outlay. Table 23 contains total ACIP program costs, both actual and projected, from FY75 through FY84. Table 24 reflects the proportion of the training dollar each skill represents expressed in terms of the percent of the total trained in FY82. These values were then used as weighting factors to compute an average DoD aviator cost of \$424,000. This means that the maximum number of aviators, pilot and NFO/ NAV combined, that could be trained for the same dollar amount is 586. Even with ACIP, the Services as a whole must train approximately 6,100 aviators annually to meet their needs. Table 25 displays the optimal distribution of these 586 aviators using the previously developed weights.

Table 23
Total ACIP Program Costs

<u>FY</u>	<u># Recipients</u>	<u>Cost (\$000)</u>
1975	93,936	\$211,280
1976	88,598	\$201,144
1977	83,881	\$195,333
1978	77,803	\$184,128
1979	73,400	\$174,414
1980	69,847	\$168,202
1981	70,175	\$204,487
1982	72,765	\$248,627
1983*	73,132	\$249,880
1984*	74,593	\$254,873
*Projected		

Table 24
FY82 Aviator Training Distribution

<u>Percent of Total Trained</u>				
<u>Type Aviator</u>	<u>Air Force</u>	<u>Navy</u>	<u>Army</u>	<u>Marine Corps</u>
Pilots				
Fixed-Wing	.29	.08	*	.04
Helicopter	.02	.07	.23	.04
NFO/NAV	.14	.08	*	.01

* Not Applicable

Table 25
Distribution of New Aviators
If Weighted Training Cost
Equals FY 82 ACIP Dollar Outlays

<u>Type Aviator</u>	<u>Air Force</u>	<u>Navy</u>	<u>Army</u>	<u>Marine Corps</u>
Pilots				
Fixed-Wing	170	47	*	23
Helicopter	12	41	13	23
NFO/NAV	82	47	*	6

* Not Applicable

E. ACIP GATE SYSTEM. This feature of ACIP was designed to enhance the cost effectiveness of the program while encouraging individuals to participate in the maximum amount of operational flying that their respective Service's force management policies allow. TAB A contains a detailed discussion of the development and structure of the gate system.

The major objection to gates is that they comprise a "look-back" system. [10] That is, the first gate or milestone does not occur until the completion of 12 years of aviation service. Therefore, an aviator is assured of receiving continuous ACIP for at least 12 years, irrespective of the fact that the officer may have failed to perform any operational flight duty beyond that required to become aeronautically designated/ rated. Proponents of the system state that, while this is theoretically possible, it is extremely unlikely, since this is in fact the most flightintensive period of an aviator's career.

In an effort to determine the validity of this concern, each Service was requested to provide the number of aviators who failed to complete the minimum operational flying required by each gate. Tables

26 and 27 present these data expressed in terms of the percent of total aviators passing through the given gate. As can be seen, an insignificant number of aviators, in most cases less than 1.0%, have received career ACIP without performing the minimum operational flying. Consequently, there is no compelling reason to establish an earlier gate.

Table 26
Pilots Who Have Failed to Meet Their ACIP Gates

Service	Gate		Gate	
	12-Year	18-Year	12-Year	18-Year
	# Failed	% of Total	# Failed	% of Total
Navy	16	0.5%	28	1.7%
Army	118	2.2%	64	3.2%
Air Force	38	0.6%	1	0.0%
Marines	0	0.0%	0	0.0%

Table 27
NFO/NAV Who Have Failed to Meet
Their ACIP Gates

Service	Gate		Gate	
	12-Year	18-Year	12-Year	18-Year
	# Failed	% of Total	# Failed	% of Total
Navy	17	1.8%	21	3.0%
Air Force	3	0.2%	5	0.5%
Marines	0	0.0%	0	0.0%

F. RATES. As to whether the ACIP rates themselves are set at the lowest level necessary to effect the desired continuation behavior, it is rather early to tell. The current rates were established by the Uniformed Services Pay Act of 1981 and placed into effect on 1 July 1982. As was seen in the private-sector analysis, this was a period of high inflation and low pilot hiring rates. Under these circumstances, continuation would be expected to be somewhat higher than what was experienced in FY78-79 when the opposite conditions existed. The rates have not yet been put to the test. However, based on the predicted industry trends, it is believed that the rates are sufficient to maintain aviator inventory-to-authorization ratios at current levels through FY87; but, in situations where significant growth is projected, as in the case of the Navy ACIP alone will not achieve the desired results.

VI. FINDINGS.

A. ACIP is necessary to maintain the Services' ability to attract and retain career aviators in sufficient quantity and quality to meet their needs.

B. The full effects of the current ACIP rates on attraction and retention are not yet known; however, the following conclusions can be drawn:

1. The rates are sufficient to maintain current inventory-to-authorization ratios through FY87. However, if the major airlines begin to hire new entrants to the pilot pool in significant numbers, as is expected to happen no later than 1990, the current ACIP rates may not be able to prevent serious losses.

2. ACIP in itself is not sufficient to support significant growth. For example, some of the aviator shortfalls are not a function of continuation, but of accession policies (0-1/0-2), and therefore cannot be corrected by means of ACIP. Other shortages (0-3 and above) exist in spite of ACIP. This situation may happen when authorizations increase at a higher rate than inventory over an extended period of time, necessitating exceptionally high continuation rates, or when the type of aviation duty to be performed is viewed as particularly unattractive. In these cases, other force management tools in addition to ACIP must be employed.

3. The rates are targeted toward the appropriate length-of-service cells.

C. The ACIP gate system is an effective means of encouraging officers to participate in the maximum operational flight time that their respective Services' manpower structures allow.

VI. RECOMMENDATION. Re-evaluate the effectiveness of the ACIP rates no later than the end of FY86.

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Air Force Association
Airline Pilots Association (ALPA)
Association of Naval Aviation
Combat Pilots Association
Commuter Airline Association
Council of Economic Advisors
Delta Airlines
Eastern Airlines
Future Aviation Professionals of America (FAPA)
Helicopter Association International
National Air Transportation Association, Inc.
National Business Aircraft Association
National Pilots' Association
Piedmont Airlines, Inc.
Professional Pilot Magazine
United Airlines, Inc.
Western Airlines, Inc.

X

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Field Interviews:

Andrews Air Force Base, MD
Coast Guard Air Station, Elizabeth City, NC
Dover Air Force Base, DE
Langley Air Force Base, VA
March Air Force Base, CA
Marine Corps Air Station, Cherry Point, NC
Marine Corps Air Station, El Toro, CA
Naval Air Facility, Andrews AFB, MD
Naval Air Station, Miramar, CA
Naval Air Station, North Island, CA
Naval Air Station, Oceana, VA
Naval Air Station, Patuxent River, MD
USS Eisenhower
USS Kitty Hawk

DETAILED HISTORICAL PERSPECTIVE

The practice of providing additional compensation to individuals participating in "aerial flight" has a long and rather involved history. In 1913 the role of military aviation was growing rapidly as were the number and variety of legislative packages introduced to recompense participants for the "exceedingly hazardous" nature of military flying. Unfortunately, there was no coordinated effort. Public Law No. 62-401, 37 Stat. 707, March 2, 1913, authorized an increase of 35% of the basic pay and allowances of Army officers actually detailed to fly heavier-than-air craft; however, pilots of other Services were not considered. Two days later, on March 4, 1913, Public Law No. 62-433, 37 Stat. 892 was enacted which extended the same pay differential to Navy and Marine Corps officers detailed to aviation duty. Both Acts limited the number of aviator authorizations to 30 officers per Service.

Each Service's flyers continued to be addressed in separate legislative actions. On July 18, 1914, Public Law No. 63-143 authorized the Army Signal Corps to increase its strength to allow for an aviation section comprised of 60 officers and 260 enlisted men. It further established two classes of aviators: "military aviators" (O-3 and above), who were awarded 75% of their basic and "length of service" pay for regular and frequent participation in aerial flight, and "junior military aviators" (O-2 and below), who were compensated at a rate of 50% of their basic and longevity pay. Student aviators received a 25% differential. This Act also extended Flight Pay to enlisted members for the first time. It was set at 50% of the individual's basic pay. Additionally, a gratuity equal to one year's basic pay was awarded to the widow of any aviator upon his death, if it occurred as a result of the performance of his flying duties.

Navy and Marine Corps officers continued to be paid at the old rates until the enactment of 38 Stat. 939, March 3, 1915. While this Act did incorporate the 50% enlisted differential, Navy and Marine Corps officers were not grouped in the same manner as those of the Army. Instead, Naval and Marine aviators, while duly ordered to duty involving actual flying of aircraft, "including balloons, dirigibles and aeroplanes," received 35% if students, while "Naval Aviators" (fully qualified aviators) were granted 50%. Authorizations were increased to 48 Naval officers and 96 enlisted and to 12 Marine Corps officers and 24 enlisted. It is interesting to note that this legislation precluded Navy O-5's or above and Marine Corps O-4's or above from drawing Flight Pay.

Between 1915 and 1922 a number of bills were passed which attempted to compensate flyers for the hazards associated with their duties. In 1916, the death gratuity program was expanded to include pensions. If a flyer died or was disabled, the "pension allowed" was double that authorized should the death or disability not have occurred as a result of an aviation accident. The Act of June 4, 1920, created the "Air Service"

of the Army (later to be designated the Army Air Corps) and brought the Flight Pay structure in line with that of the other Services by concurrently abolishing the aviator classification system and establishing a standard 50% rate for all officer and enlisted personnel. However, uniform Flight Pay rates were not formally established until the Joint Service Pay Act of 1922 (Public Law No. 67-235, 42 Stat.625), which provided that "all officers, warrant officers, and enlisted men of all branches of the Army, Navy, Marines Corps, and Coast Guard, when detailed to duty involving flying, shall receive the same increase of their pay... as now authorized for the performance of like duties in the Army." Additionally, the necessity of specifying uniform entitlement standards was addressed for the first time by this Act. The resultant Executive Order, E.O. 3705-B of July 1, 1922, directed that a member make 10 flights or be in the air at least four hours per month to qualify for Flight Pay. Executive Order 4610 of March 10, 1927 further specified that the 10 flights must total at least three hours. Flight Pay remained essentially the same until the findings of the 1948 Advisory Commission on Service Pay, more commonly known as the Hook Commission, which studied several of the Hazardous Duty Incentive Pays.

The Hook Commission first introduced the incentive aspect of the Hazardous Duty Incentive Pays (HDIP). It stated, in part, "Close examination of the nature of hazardous duty and their expressed or implied reasons for accepting risks indicated that incentive to engage and remain in hazardous occupations provided a more realistic and practical basis for determining the rates of special pay than the theory of recompense for shorter career expectancy." [1] The Commission further found that the differential offered is apparently most effective as an incentive when related to, even though not proportionate to, basic compensation. "Experience and good sense dictates the need for a greater differential for individuals whose earnings are higher and thus have more to lose through death or disability. The differential should be adequate to attract and keep men in these pursuits at the grade and age at which they are most effective." [1] As a consequence of the Hook Commission recommendations, the Flight Pay rate schedule (displayed at Table 1), which indirectly tied Flight Pay to basic compensation by establishing grade differentials and targeted the greatest incentive toward mid or 'peak usage' officer grades, was incorporated into the Career Compensation Act of 1949 (Public Law No. 81-351, 63 Stat. 802).

Table 1
Hazardous Duty Incentive Pay--Flight Pay (1949-1954)

<u>GRADE</u>	<u>\$/MONTH</u>	<u>GRADE</u>	<u>\$/MONTH</u>
O-8	\$150	W-1 Thru W-4	\$100.00
O-7	\$150	E-7	75.00
O-6	\$210	E-6	67.50
O-5	\$180	E-5	60.00
O-4	\$150	E-4	52.50
O-3	\$120	E-3	45.00
O-2	\$110	E-2	37.50
O-1	\$100	E-1	30.00

In October 1952 another study group was formed to examine all special and incentive pays. This group was called the Commission on Incentive Hazardous Duty and Special Pays and was later known as the Strauss Commission. On the subject of these pays in general, the Commission stated, "...increases in base pay and allowances, without corresponding increases in incentive pay, depreciate the incentive value of these pays." [2] In effect, they were recommending the abolishment of the fixed rate established by the Career Compensation Act of 1949 and institution, or probably more correctly, the reinstitution of the percentage-of-basic-pay system. While the then-new Eisenhower administration chose not to act upon the recommendations of the Strauss Commission, the report did play a role in the drafting of the Career Compensation Act of 1955 by reenforcing the concept that the purpose of HDIP was that of attraction and retention. This Act not only increased the rates per grade set by the Act of 1949, but also introduced longevity step increments. The Senate Report justified this departure from the 1949 fixed-rate system in this manner: "This approach causes the amount of incentive pay to vary not only between grades but within a particular grade based on years of service. The direct relationship of incentive pay and basic pay offers a greater incentive for retaining qualified air crew...members in hazardous duties." [3] While not a percentage system per se, the influence of the Strauss Commission reasoning is clear. The resultant rate structure, with the exception of the addition of grades O-10, O-9, E-9, and E-8 which were not established until 1958, remained in effect until the Aviation Career Incentive Act of 1974 (Table 2).

Table 2
Hazardous Duty Incentive Pay - Flight Pay (1955-1973)
(Dollars per Month)

PAY GRADE	UNDER 2	OVER 2	OVER 3	OVER 4	OVER 6	OVER 8	OVER 10	OVER 12	OVER 14	OVER 16	OVER 18	OVER 22	OVER 26	OVER 30
O-10	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165	\$165
O-9	165	165	165	165	165	165	165	165	165	165	165	165	165	165
O-8	155	155	165	165	165	165	165	165	165	165	165	165	165	165
O-7	150	150	160	160	160	160	160	160	160	160	160	160	160	160
O-6	200	200	215	215	215	215	215	215	215	220	245	245	245	245
O-5	190	190	205	205	205	205	205	210	225	230	245	245	245	245
O-4	170	170	185	185	185	195	210	215	220	230	240	240	240	240
O-3	145	145	155	165	180	185	190	200	205	205	205	205	205	205
O-2	115	125	150	150	160	165	170	180	185	185	185	185	185	185
O-1	100	105	135	135	140	145	155	160	170	170	170	170	170	170
W-4	115	115	115	115	120	125	135	145	155	160	165	165	165	165
W-3	110	115	115	115	120	120	125	135	140	140	140	140	140	140
W-2	105	110	110	110	115	120	125	130	135	135	135	135	135	135
W-1	100	105	105	105	110	120	125	130	130	130	130	130	130	130
E-9	105	105	105	105	105	105	105	105	105	105	105	105	105	105
E-8	105	105	105	105	105	105	105	105	105	105	105	105	105	105
E-7	80	85	85	85	90	95	100	105	105	105	105	105	105	105
E-6	70	75	75	80	85	90	95	95	100	100	100	100	100	100
E-5	60	70	70	80	80	85	90	95	95	95	95	95	95	95
E-4	55	65	65	70	75	80	80	80	80	80	80	80	80	80
E-3	55	60	60	60	60	60	60	60	60	60	60	60	60	60
E-2	50	60	60	60	60	60	60	60	60	60	60	60	60	60
E-1	50	55	55	55	55	55	55	55	55	55	55	55	55	55
E-1*	50													

* Under 4 months and Aviation Cadets

There was, however, another issue not specifically written into the law but which also had a major impact on the evolution of ACIP, that of "proficiency flying." Each Service set minimum flight hour standards believed necessary for an aviator to remain proficient at his craft. In every case, these proficiency hours, generally 100 hours per year, exceeded the 48 annual hours defined as the minimum "frequent and regular" participation required by the existing Executive Orders. (By 1964 E.O. 11157 allowed "banking" of time to qualify for Flight Pay.) If an aviator failed to meet these proficiency hours each year, he lost his aviator designation. Beginning in the early fifties the character of military flying and the political climate were undergoing subtle yet important changes. The age of the "undeclared war" began, Service force structures changed accordingly and great technological advances were made. This contributed to post-Korea and post-Vietnam aviator excesses, especially in the Air Force. In response to this, the Services reduced training pipelines, instituted early-release programs and assigned aviators to non-flying positions at increased rates. The "early-out" policy and reduced aviator production would have significant impact on the Services' ability

to meet their pilot requirements in the future. The assignment policies, however, had more immediate results. The number of members participating in proficiency vice operational/ training flying increased at what was viewed by Congress at an alarming rate. As early as 1953, the House Appropriations Committee expressed concern over the tremendous cost of "so-called proficiency flying" for officers in administrative positions who "would probably never return to a flying job." [4]

In an attempt to reduce these costs, Congress, in the 1954 Appropriation Act, exempted members with 20 years or more aviation service from participating in proficiency flying. A significant saving in terms of aircraft procurement, maintenance and operating costs was expected to be achieved. However, because of the limited number of eligibles for "excusal" and the temporary nature of the legislative authority, the Services did not fully implement the program.

During 1958, DoD proposed alternative pay systems in an effort to soften the impact of loss of Flight Pay by aviators who, largely due to the needs of the Service and not individual choice, were not assigned to flying positions. Congress did not enact the necessary legislation, but chose instead through the 1962 Appropriation Act to extend the excusal authority to members who either possessed more than 15 years of aviator service or were on remote assignment. Between 1962 and 1973 the excusal authority parameters were in almost constant flux.

By the early 1970's the military aviator, especially pilot, retention rates were considerably below what the Services needed to maintain an aviator force at the desirable grade and experience levels. It was generally accepted that the existing system was effective in attracting required numbers of volunteers, but the Services were experiencing difficulty in retaining aviators who had completed their initial obligation following training. Table 3 reflects the retention rates of this aviator category between FY69 and FY73 as opposed to the required retention rates for the same periods. [5]

Table 3
Fiscal Years 1969-1973 Pilot Retention Rates
(Desired/Actual)*

<u>SERVICE</u>	<u>FY69</u>	<u>FY70</u>	<u>FY71</u>	<u>FY72</u>	<u>FY73</u>
Army Commissioned Officers	100/67	40/87	27/91	33/73	38/68
Army Warrant Officers	100/41	20/22	10/18	15/23	29/32
Navy	49/32	47/26	50/27	50/34	52/43
Marine Corps	45/40	45/32	45/37	45/38	45/44
Air Force	52/46	52/42	52/45	52/45	52/47

* Rounded to Nearest Percent

While the Army was faring quite well at the time, the other Services, who together had over 80% of all military pilots, had never met their objectives during that timeframe.

Under the system existing at the time, an aviator received only 45% of his Flight Pay in the first 16 years of service and 55% in the last 14 years of service after he had completed most of his flying assignments. [6] The Aviation Career Incentive Act, 1974, on the contrary, was designed specifically to "concentrate the highest rates of pay in the most flight-intensive period of an aviator's career." [7] The role of ACIP is stated quite clearly in the House of Representatives' Report on the subject:

The purpose of the bill is to restructure the flight pay system of the Armed Forces so as to achieve a more equitable distribution of flight pay and increase the ability of the Armed Forces to attract and retain officer aviator crewmembers...It recognizes the Committee's desire to define flight pay not simply as recompense for undergoing occasional hazardous duty but as an incentive pay for undertaking a career that is, on a continuing basis, more hazardous than other service careers and at the time involves a capacity to absorb special professional training which represents a considerable investment on the part of the Government in both money and time...[6]

The major provisions of the Act were:

(1) It resolved the excusal system versus proficiency flying controversy by establishing a set of operational flying time standards or "gates," thereby allowing for continuous incentive pay throughout the recipient's aviation career, irrespective of whether the officer was filling a flying or non-flying position. This also assured the aviator of having a relatively steady income stream.

(2) ACIP set rates based on the length aviation service rather than grade and total service.

(3) It realigned the rate structure to pay the highest amounts during the critical retention years--at the end of the aviators' initial service obligations following training--through the most flight-intensive periods of their careers.

(4) It recognized the lower utilization as aviators and naturally higher continuation of senior officers by slowly reducing and then finally terminating payment by the 25th year of officer service, except in the case of warrant officers (in view of the fact that this category of aviators could be expected to remain in flight status throughout their entire careers).

Tables 4 and 5 represent the ACIP pay structure as contained in the Aviation Career Incentive Act of 1974 (P.L. 93-294) for commissioned and warrant officers, respectively.

Table 4
1974 ACIP Rate Structure
Commissioned Officers

<u>PHASE I</u>		<u>PHASE II</u>	
<u>Years of Aviation Service</u>	<u>Monthly Rate</u>	<u>Years of Aviation Service</u>	<u>Monthly Rate</u>
2 or less	\$100	over 18	\$225
over 2	125	over 20	205
over 3	150	over 22	185
over 4	165	over 24	165
over 6	245	over 25	0

Note 1: ACIP for officers of pay grade O-7 could not be more than \$160 a month, and that for officers of pay grade O-8 or above, not more than \$165, regardless of years of service.

Note 2: Officers with more than 18 years of officer service but less than six years of aviation service received Phase I rates.

Table 5
1974 ACIP Rate Structure
Warrant Officers

<u>Years of Aviation Service</u>	<u>Monthly Rate</u>
2 or less	\$100
over 2	110
over 6	200

Under the ACIP gate system an aeronautically designated officer, except a flight surgeon, is entitled to continuous ACIP for the specified period while the following conditions are met:

(1) Under any circumstances until completion of 12 years of aviation service.

(2) If at the time of reaching this 12 year "gate," the officer has accumulated at least 6 years of operational flying, that officer would receive continuous ACIP until completion of 18 years of aviation service (an additional 6 years).

(3) If at the 18-year gate, the aviator has performed at least 9 but less than 11 years of operational flying duty, the officer is entitled to ACIP for 4 more years, at which time the 22-year gate is reached.

(4) If, however, the officer has had at least 11 years of operational flying duty at that 18-year gate, the aviator would draw ACIP continuously until completion of 25 years of service as an officer, or in the case of a Warrant Officer, for as long as aeronautically qualified.

(5) Flight surgeons or other medical officers required by competent orders to perform operational flying duties and who participate in at least 4 hours of aerial flight per month, and aviators who are serving under the same circumstances but have failed to meet their gates, are entitled to ACIP on a monthly basis.

In recognition of the deterioration of incentive value of ACIP since 1974, the Military Personnel and Compensation Amendments of 1980 (Public Law No. 96-343) increased ACIP rates for both commissioned and warrant officers by 25%.[8] Additionally, the maximum levels payable to O-7's and O-8's was increased to \$200 and \$206, respectively. However, there was some concern that these ACIP increases would be insufficient. Consequently, the DoD Authorization Act of 1981 (Public Law 96-342, 94 Stat. 1095-1096), passed the same day, established a special continuation pay for aviator officers, commonly known as the Aviator Officer Continuation Pay (AOCP). It was to be paid in addition to ACIP to officers in specific aviator categories who agreed to remain on active duty beyond their initial service obligation. The AOCP authority was amended by the Uniform Services Pay Act of 1981, limiting it to Navy and Marine Corps aviators who initiated their agreements between October 14, 1981, and September 30, 1982. Additionally, it restricted AOCP recipients from receiving the increased ACIP rates included in this legislation. While enhancing ACIP rates for all grades of officers not serving under an AOCP agreement, the Act purposefully targeted the greatest ACIP increase toward "retention critical" commissioned officers--those who have completed their minimum service obligation incurred as a result of flight training but with less than 18 years' service. This targeting of "mid-grade" officers, however, necessitated raising the rates payable to the more senior aviators to preclude pay inversions and to effect an "orderly incentive pay reduction." Finally, ACIP was extended to those officers in pay grade O-6 and below with more than 25 years of service who were actually required to perform flying duties. Prior to this provision, some officers were performing regular flying duties without the benefit of ACIP, while sometimes junior and certainly less experienced aviators were receiving substantially greater compensation for performing the same function.[9] Current ACIP rates for commissioned and warrant officers can be seen in Tables 6 and 7.

Table 6
Current ACIP Rate Structure
Commissioned Officers

<u>PHASE I</u>		<u>PHASE II</u>	
<u>Years of Aviation Service</u>	<u>Monthly Rate</u>	<u>Years of Aviation Service</u>	<u>Monthly Rate</u>
2 or less	\$125	over 18	\$370
over 2	156	over 20	340
over 3	188	over 22	310
over 4	206	over 24	280
over 6	400	over 25	250

Note: ACIP for officers in pay grade 0-7 is limited to \$200 per month and that for officers in pay grade 0-8 or above, to \$206.

Table 7
Current ACIP Rate Structure
Warrant Officers

<u>Years of Aviation Service</u>	<u>Monthly Rate</u>
2 or less	\$125
over 2	156
over 3	188
over 4	206
over 6	400

Appendix B References

1. Career Compensation for the Uniformed Forces, "A Report and Recommendation for the Secretary of Defense by the Advisory Commission on Service Pay," Dec. 1948.
2. Report of the Strauss Commission, "Differential Pays for the Armed Forces of the United States," Volume II, March 1953.
3. Senate Report No. 87-662, accompanying H.R. 87145, 87th Congress 1st Session.
4. House Report No. 87-680, June 27, 1953.
5. Congressional Record - Senate, May 21, 1973, p S8750.
6. House Report No. 93-799, accompanying H.R. 12670, 93rd Congress, 2nd Session.
7. Senate Report No. 93-841, accompanying H.R. 12670, 93rd Congress, 2nd Session.
8. House Report No. 96-1233 (Committee of Conference), accompanying H.R. 5168, 96th Congress, 2nd Session.
9. Senate Report No. 97-146, accompanying S. 1181, 97th Congress, 1st Session.

SUMMARY OF RESPONSES

Aviation Career Incentive Pay

- Issues:
1. An incentive pay is necessary for the Services to attract and sufficiently retain career aviators to meet their needs.
 2. ACIP rates are currently sufficient but may not be when airlines again begin to hire in significant numbers; however, ACIP is not the answer for all manning problems.
 3. ACIP rates and gates, as currently structured, are targeted toward the proper population.

<u>Department</u>	<u>Comments</u>
Army	Concurred.
Navy	Concurred.
Air Force	Concurred.
Coast Guard	Concurred.
Public Health Service	Concurred.
NOAA	Concurred.
JCS	Concurred.

37 U.S.C. 301b
SPECIAL PAY: AVIATION CAREER OFFICERS EXTENDING
PERIOD OF ACTIVE DUTY

AVIATION OFFICER CONTINUATION PAY

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Aviation Officer Continuation Pay (AOCP)

I. PURPOSE. Aviation Officer Continuation Pay (AOCP) was established as a supplement to Aviation Career Incentive Pay (ACIP). Its purpose is to help alleviate, when needed, current or projected shortages of career officers in aviation specialties determined by the Secretary of the Service concerned to be critical. Although not currently in use, AOCP was examined to determine its effectiveness in decreasing aviator shortages and its appropriateness for future applications.

II. DATA SOURCES. This study is an extension of the ACIP analysis. Data sources include the Service Staffs of the Army, Air Force, Marine Corps, Navy, Coast Guard, Public Health Service, and the National Oceanic and Atmospheric Administration (NOAA). Additionally, various military and civilian professional associations and private sector organizations provided useful information. Although not a primary source of data, extensive field interviews were conducted in conjunction with ACIP interviews. A listing of outside agencies and field interviews is at Appendix A.

III. HISTORICAL PERSPECTIVE. (NOTE: The events that led to the establishment of special pays for aviators, along with a complete legislative history, can be found in the analysis of ACIP.) By 1980, manning levels in aviation communities of all Services had declined to the point that Congress increased ACIP rates for commissioned and warrant officers 25 percent across the board because of the "need for and desirability of" such increases to improve retention.¹ Concurrently, the Department of Defense Authorization Act of 1981 (Pub. L. No. 96-342) established a special continuation pay for aviation officers which authorized, under regulations prescribed by the Secretary of Defense (Secretary of Transportation for the Coast Guard), the payment of up to four months' basic pay for each year a qualified officer agrees to remain on active duty beyond the expiration of his obligated service. The aviation continuation pay authorized was supplemental to any other pay and allowances, including ACIP, to which an officer was entitled. Officers qualifying for AOCP were required to meet the following criteria:

- 1) be entitled to ACIP;
- 2) be in a pay grade below O-7;
- 3) be qualified to perform operational flying duty;
- 4) have at least 6 years but less than 18 years of aviation service as an officer--agreement could not extend beyond the 19th year of active service (DoD instruction further limited aviation service to 16 years);
- 5) be in an aviation specialty designated as critical;
- 6) have completed initial aviation service obligation; and
- 7) agree to remain on active duty in aviation service for at least one year.

The Air Force and the Army supported the purpose of AOCP, but believed that their particular aviator shortages would be solved by the use of increased ACIP rates and internal management actions. They there-

fore declined the use of the pay for the initial period, reserving the right to future use of the bonus. Aviator shortages at end FY80 were more extreme in the Navy (2,400) and in the Marine Corps (580).

Although AOCF was authorized in October 1980, Congressional concern about how the program would be implemented delayed payments to July 1981, when it was funded by the Supplemental Appropriations and Recession Act of 1981 (Pub. L. No. 97-12). Additionally, the Uniformed Services Pay Act of 1981 (Pub. L. No. 97-60) amended the Authorization Act of 1981 and limited AOCF to specific instances. First, only the Navy or the Marine Corps could execute AOCF agreements between October 14, 1981, the date of adoption of the Act, and September 30, 1982. Second, during the effective period of their AOCF agreement, officers receiving AOCF could not receive ACIP at a higher rate than the rate in effect on September 30, 1981. Finally, the Act in essence established an expiration date for AOCF of September 30, 1982, after which no new agreement would be accepted.

The Navy and Marine Corps' exclusive authority to pay AOCF was the result of Congress' belief that those Services' officers were the main category experiencing "retention problems."² Similarly, the provision forbidding ACIP payments at rates exceeding those in effect on September 30, 1981, was to insure that affected officers would "not be entitled to the increased rates of [ACIP] during the period obligated as a result of the [AOCF] bonus."³ The termination date was set at September 30, 1982, because Congress believed "the bonus to be an inappropriate solution to long-term retention problems"⁴ with military aviators. Since the AOCF program was adopted to allow the Services to deal with "aviation specialties where retention problems and shortages exist that cannot be addressed by other management action or initiatives,"⁵ the 1981 amendments were intended by Congress to restrict its applicability precisely to those situations.

The payment plan for AOCF is contained in Table 1. The plan set the minimum payment level which analysis indicated would achieve maximum attainable continuation rates between the 6th and 9th years of service. It also set declining payment levels through the 15th year of service to minimize pay inversions between junior and senior aviators and to preclude significant pay cuts for senior personnel. The monthly basic pay rate of the aviator was multiplied by the number of months authorized in the table. Annual payments were made on the commencement date of the AOCF agreement and each subsequent anniversary date of the AOCF obligation.

Table 1
AOCF Payment Plan

<u>YEARS OF AVIATION SERVICE*</u>	<u>OBLIGATION**</u>	<u>MONTHS BASIC PAY PER YEAR OBLIGATED</u>
6 but less than 9	4 years	4
6 but less than 9	1, 2, or 3 years	3
9 but less than 12	4, 3, 2, or 1	3
12 but less than 13	4, 3, 2, or 1	2.5
13 but less than 14	3, 2, or 1	2.5
14 but less than 15	2 or 1	2
15 but less than 16	1	1

*Years of aviation service apply only to contracts before August 1982. At that time, years of aviation service was changed to years of active military service with 6 years of aviation service as an officer.

**One year obligation contract not available after 29 December 1981.

We believe that because of budgetary constraints, increased military retention, and growing criticism of the rising cost of AOCF, the program was not extended past the 1982 cut off date, although anniversary payments would continue to be honored. As of the date of this report, however, Congress is debating new AOCF legislation. This proposed legislation limits AOCF contracts to officers that:

- 1) have at least six but less than eleven years of active duty;
- 2) have completed minimum service required for aviation training; and
- 3) have not previously been paid AOCF.

Contract lengths offered would be 3 or 4 years at \$4,000 and \$6,000, respectively. Additionally, for personnel with less than 7 years of active duty, a six-year agreement at \$6,000 per year would be available.⁶

The number of officers receiving AOCF and associated annual costs are given in Table 2.

Table 2
Aviation Officer Continuation Pay
(in Millions of Dollars)

<u>Fiscal Year</u>	<u>Total Personnel</u>	<u>New Contracts</u>	<u>Cost of New Contracts</u>	<u>Projected Anniversary Payments</u>
1981	6,923	6,923	\$34.0	
1982	8,632	2,857	25.8	\$27.2
1983	6,280	0		47.1
1984	5,381	0		40.4
1985	1,674	0		17.8
1986	0	0		0

IV. METHODOLOGY. As previously stated, AOCF's purpose is to correct, through the use of bonus payments, current or projected shortfalls of career officers in aviation specialties in which the use of ACIP alone has been or is expected to be insufficient. This review will not attempt to establish the fact that shortages exist in various aviation fields. That was done in the review of ACIP. We will, however, evaluate the effectiveness of AOCF in meeting the needs of the Services and in determining its potential for future applications. In light of this, we addressed the following questions during the review of AOCF:

1. Has AOCF been effective in alleviating the shortfalls in the aviation career field?
2. Are the currently established criteria for payment appropriate under current or projected conditions?
3. Is there a need for AOCF in the future?

Since only the Navy and Marine Corps were authorized to use AOCF, this analysis will rely exclusively on data from these Services. This is not to imply that AOCF could not be of use to the other Services in the future. If conditions exist that warrant the utilization of AOCF and it has been determined that AOCF has been effective in alleviating shortage conditions, AOCF could then be considered for use by the other Services.

V. ANALYSIS. Declining continuation rates in the Services from FY77 through FY79 created a demand for an aviation continuation bonus. Of special concern was the loss of aviators in the mid-career category. In the review of ACIP, it was shown that personnel were leaving in large numbers at three decision points. The major decision point occurred

between 6 to 10 years of service, a lesser impact decision point between 10 and 13 years, and, as would be expected, a significant decision point at 20 years, retirement eligibility. The low continuation rates at these points were causing an imbalance in the aviator inventory levels of the Services and were generated by a myriad of factors. The airlines were hiring at record numbers during this period, and the lure of their salaries caused pilots to leave in large quantities. The economy was good, causing the NFO/ Navigators, who do not normally experience the airline draw, to also leave in record numbers. Additionally, the Navy and Marines experienced training shortfalls. Tables 3 and 4 illustrate the Navy and the Marine Corps aviator inventory-to-authorization ratios.

Figure 1 displays the cumulative effect of Regular Military Compensation (RMC), ACIP (AOCP recipients receive \$306 per month) and AOCP as compared to median private sector pilot salaries. While not equal to average civilian jet pilot salaries, the total pay of aviators became more competitive during the periods when retention became critical (ages 27-32). The Services believed that by decreasing the lure of the airlines and other outside opportunities, the AOCP payment would result in increased retention of pilots and NFO/Navigators.

Figure 1

1982 CIVILIAN PILOT WAGES*

COMPARED TO PILOT RMC, ACIP AND AOCP

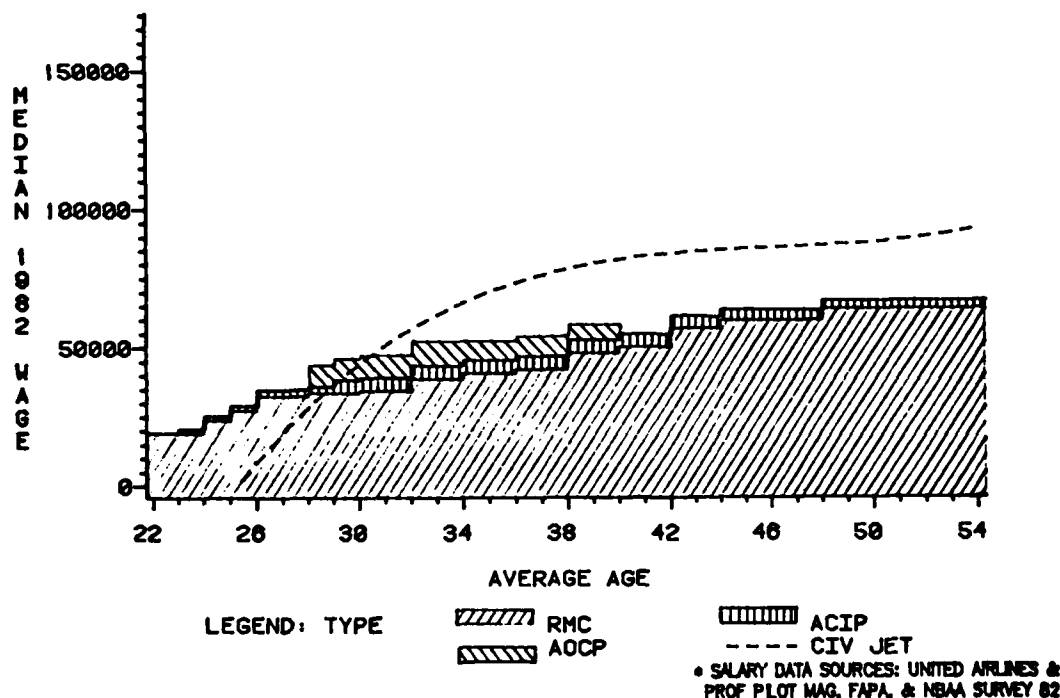


Table 3

Navy Pilot Inventory-to-Authorization Ratios

FY	GRADE										TOTAL				
	0-1/0-2			0-3			0-4			0-5					
	INV	AUTH	Z	INV	AUTH	Z	INV	AUTH	Z	INV		AUTH	Z		
77	3458	3379	102	4174	4372	95	2371	2915	81	1726	1929	89	11729	12955	9
78	3336	3024	110	3580	4180	86	2454	3027	81	1576	1746	90	10946	11977	9
79	3366	2980	113	3033	4317	76	2547	2918	88	1421	1770	80	10367	11985	8
80	3165	3009	105	2922	4457	66	2564	2927	88	1390	1790	78	10041	12183	8
81	3526	3055	115	3030	4557	66	2566	2959	87	1416	1828	77	10538	12399	8
82	3790	3418	111	3220	4026	80	2546	2515	101	1545	1635	94	11101	11594	9

Navy NFO Inventory-to-Authorization Ratios

FY	GRADE										TOTAL						
	0-1/0-2			0-3			0-4			0-5							
	INV		AUTH	%	INV		AUTH	%	INV			AUTH	%	INV		AUTH	%
	INV	AUTH	INV		AUTH	INV	AUTH		INV	AUTH		INV		AUTH			
77	1980	1831	108	1659	1889	88	945	993	95	309	490	63	4893	5203	94		
78	1680	1782	94	1743	1963	89	965	1076	90	363	443	82	4751	5264	90		
79	1620	1734	93	1674	1892	88	1074	1072	100	426	452	94	4794	5150	93		
80	1793	1773	101	1713	1903	90	1128	1088	104	303	434	111	5137	5218	98		
81	1976	1809	109	1779	1895	94	1160	1115	104	531	478	111	5446	5297	103		
82	2057	1869	110	1739	1750	99	1236	1094	113	563	744	76	5595	5457	103		

Marine Pilot Inventory-to-Authorization Ratios

FY	GRADE																		
	0-1/0-2				0-3				0-4				0-5				TOTAL		
	INV	AUTH	%		INV	AUTH	%		INV	AUTH	%		INV	AUTH	%		INV	AUTH	%
77	942	1747	54		1348	1182	114		724	743	97		446	347	129		3460	4019	86
78	738	1610	46		1250	1110	113		896	698	128		395	326	121		3280	3744	88
79	765	1652	46		1194	1120	107		841	696	121		413	327	126		3213	3795	85
80	740	1690	44		1212	1120	108		918	702	131		411	329	125		3281	3841	85
81	999	1595	63		1194	1104	108		921	780	118		424	388	110		3538	3867	91
82	1167	1642	71		1246	1104	113		954	751	127		437	355	123		3804	3852	99

Marine NFO Inventory-to-Authorization Ratios

FY	GRADE																			
	0-1/0-2				0-3				0-4				0-5				TOTAL			
	INV		AUTH		%	INV		AUTH		%	INV		AUTH		%	INV		AUTH		%
	INV	AUTH	INV	AUTH		INV	AUTH	INV	AUTH		INV	AUTH	INV	AUTH						
77	289	291	99	257	247	104	97	124	78	14	66	21	657	728	90					
78	243	304	77	280	286	98	139	141	99	15	76	20	677	807	84					
79	231	350	66	291	292	100	142	144	99	19	77	25	683	863	79					
80	203	361	56	303	288	106	161	141	114	27	76	36	694	866	80					
81	206	369	56	286	250	114	162	147	110	42	57	74	696	823	85					
82	178	353	48	259	246	105	175	143	122	48	53	91	660	795	83					

A. BONUS EFFECTIVENESS.

1. Impact on Inventory. Has AOCB been effective in alleviating the aviator shortfalls experienced by the Navy and the Marine Corps? Considerable analysis has been performed in attempting to establish the numbers of personnel who were affected by the bonus. A clear determination, however, is difficult. When AOCB was enacted in 1981, there were other pays and benefits that likely influenced the retention patterns of aviators. Most notable of these were an FY80 25 percent increase in ACIP, an 11.7 percent basic pay and allowances raise, and the establishment of the Variable Housing Allowance. In FY81 an additional 14.3 percent basic pay and allowances raise was approved along with another 25 percent raise in ACIP for mid-career flyers. Furthermore, the economy was on the downturn and airline hires virtually ended as the furlough list grew longer. Without taking these factors into account, one can erroneously attribute gains to AOCB. We have, therefore, tried to adjust for other influences as much as possible in our estimation of AOCB's effectiveness.

In computing the estimated number of personnel who remained in the service because of the bonus, it was assumed, first, that aviators generally react similarly to factors that influence retention, and second, since the Air Force did not receive a bonus, the gains achieved in their continuation rates were basically caused by the factors mentioned above. (These are conservative assumptions which may underestimate computed AOCB gains but which insure that the results of the analysis are not inflated.) To compute FY81 gains, we used FY79 rates as the base because these rates were not influenced by the FY80 and FY81 compensation gains and the AOCB bonus. Using Air Force continuation rates, the percentage changes between FY79 and FY80 were computed. By applying these percentages to both the Navy and Marine Corps' actual FY79 continuation rates, we computed what we believe are good approximates of rates without AOCB. These rates were then applied to the actual FY80 inventory, and then the probable FY81 inventory without the bonus was determined. Comparing this with the actual FY81 inventory produces the estimated impact of the AOCB bonus alone. Results of the analysis for FY81 are shown in Tables 5 and 6.

Our analysis identified several years-of-service (YOS) cells which did not show gains that could be directly attributed to the bonus. Many were driven by pay increases and outside influences. Some years-of-service cells experienced a decline in their actual populations from what was expected. Furthermore, during FY81, the Navy inprocessed 106 pilots and NFOs through prior service or recall programs. Similarly, the Marine Corps procured 32 pilots and 1 NFO. Many of these personnel were probably induced by the bonus to reenter active duty. However, it cannot be established that the bonus was the overriding recall decision factor (i.e., many recalls may have been the result of a poor economy). The majority fell into the 10 to 15 YOS cells and account for the high gains in those year groups. Consequently, many of the gains, while they may be attributed to the bonus, are not true retention gains. On the whole,

Table 5
Gains Attributed to AOCF FY81

NAVY				
Pilots YOS	FY79 Rates Adjusted	QRM Projected FY81 Inventory	Actual FY81 Inventory	Gains Attributed to Bonus FY81
5	.88			
6	.78	605	721	116
7	.76	514	537	23
8	.86	473	501	28
9	.97	403	449	46
10	.86	408	424	16
11	.92	323	329	6
12	.99	359	370	11
13	.99	442	425	*
14	.95	360	375	15
15	.95	431	429	*
				261
NFO				
YOS				
5	.89			
6	.87	366	408	42
7	.89	294	318	24
8	.94	327	327	*
9	.93	297	302	5
10	.92	205	199	*
11	.96	202	209	7
12	.94	188	184	*
13	.97	190	194	4
14	.99	136	137	1
15	.92	102	101	*
				83

* Gains cannot be attributed solely to the bonus.

the Navy and the Marine Corps did retain personnel that otherwise would have left the Service in FY81 and attracted prior service personnel.

Even though other YOS cells may have experienced increases outside of the YOS range selected, we cannot credit these increases to the bonus. In fact, an argument could be made that it is likely any aviator retained after year 13 would have remained in the service anyway. We believe the gains in these years are too small to have statistical significance.

Table 6
Gains Attributed to AOCF FY81

MARINE CORPS				
Pilots YOS	FY79 Rates Adjusted	QRM Projected FY81 Inventory	Actual FY81 Inventory	Gains Attributed to Bonus FY81
5	.89			
6	.87	263	236	*
7	.86	149	147	*
8	.91	175	199	24
9	.90	114	122	8
10	.86	172	179	7
11	.98	118	130	12
12	.96	176	169	*
13	.96	169	169	*
14	1.00	164	169	5
15	.97	158	155	*
				<u>51</u>
NFO				
YOS				
5	.89			
6	.85	69	58	*
7	.86	37	37	*
8	.95	34	39	5
9	.82	33	31	*
10	.99	34	37	3
11	.99	42	38	*
12	.97	35	27	*
13	.96	39	38	*
14	.99	28	28	*
15	.89	26	26	*
				<u>8</u>

* Gains cannot be attributed solely to the bonus.

What is significant is the fact that in the Navy more than 85% of the pilot gains and 76% of the NFO gains attributed to AOCF were in the critical midgrades, 6 to 10 YOS. The Marine Corps gains, while smaller, were also in the mid-career grades -- 67% and 100% for pilot and NFOs, respectively.

AOCF's effectiveness in those grades is further shown when one compares the percent the gains represent with respect to the number of contracts made, referred to as the bonus yield. Table 7 summarizes this bonus yield for FY81 AOCF contracts. As can be seen, the yield in YOS 11-15 is not as substantial as those of the mid-career grades.

Table 7
FY81 AOCP Contracts

<u>NAVY</u>	<u>YOS</u>	<u>CONTRACTS</u>	<u>GAINS</u>	<u>BONUS YIELD</u>
Pilot	6-10	1,454	229	16%
	11-15	1,661	32	2%
NFO	6-10	934	78	8%
	11-15	519	12	2%
<u>MARINES</u>				
Pilot	6-10	532	39	7%
	11-15	530	17	3%
NFO	6-10	642	8	1%
	11-15	632	0	0%

Calculating the gains due to AOCP for FY82 is somewhat more difficult. FY82 continuation was not only influenced by the compensation gains in FY80 but also by gains during FY81. A 14.3 percent across-the-board basic pay and allowances raise and another 25 percent increase in flight pay (to nonAOCP recipients) were added in an attempt to achieve "competitiveness" with the civilian sector. In order to calculate actual gains for FY82, we assumed that the Navy and Marines' actual rates were representative of the behavior of nonbonus recipients in that year, recognizing the fact that continuation rates may be somewhat high due to bonus influences. Since everyone was required to sign at least a 1-year contract, we further assumed that those individuals would be present in FY82 -- a 100% continuation rate. FY81 rates were not used because we believe these continuation rates are high as a result of the large numbers of personnel who remained based on the firsttime influence of the bonus and other compensation improvements; they would have inflated the projected inventory. We should, however, be able to estimate the minimum gains in FY82 using FY82 rates.

To calculate gains, FY81 actual inventory was adjusted by subtracting the FY 1981 gains attributed to the bonus. Applying FY82 continuation rates to this adjusted inventory, then adding back the FY81 bonus gains, resulted in a projected FY82 inventory. The bonus gains were computed by comparing the projections with actual FY82 inventories. Navy results are summarized in Table 8; Table 9 contains the Marine Corps results.

FY82 showed an improvement for aviators as a whole. In fact, total bonus gains were greater in FY82 than in FY81. This reflects the influence of the bonus on retention and the declining influence of the substantial pay raises of the previous years. Furthermore, some people may have waited to see how the bonus program was working and to take advantage of any pay increases, thereby delaying their decision until

Table 8
Gains Attributed to AOCF FY82

NAVY				
Pilots YOS	FY82 Rates Actual	QRMC Projected FY82 Inventory	Actual FY82 Inventory	Gains Attributed to Bonus FY82
5	.98			
6	.82	753	743	*
7	.75	612	651	39
8	.81	409	485	76
9	.94	411	501	90
10	.96	424	433	9
11	.95	408	420	12
12	.99	313	314	1
13	.99	366	373	7
14	.98	421	474	53
15	.98	368	364	*
				<u>287</u>

NFO YOS

5	.99			
6	.91	342	371	29
7	.90	375	381	6
8	.89	289	296	7
9	.96	291	317	26
10	.95	290	272	*
11	.97	189	181	*
12	.94	203	201	*
13	.96	173	173	*
14	.98	186	190	4
15	.99	134	129	*
				<u>72</u>

* Gains cannot be attributed solely to the bonus.

the FY82 bonus year. Actual gains that could be credited to the FY82 bonus could, however, be higher since FY82 continuation rates are probably inflated due to the influence of AOCF itself. With this in mind, we believe that these aviators are the minimum gains that the Navy and Marine Corps attained in FY82 as a result of the AOCF program. Moreover, increases were predominantly in the 6-to-10 years of service cells that the Services badly needed. In FY82, the Navy gained 100 pilots and the Marine Corps 31 pilots and 5 NFOs through prior service and recall programs which we believe account for the high number in the 14th YOS cell.

Table 9
Gains Attributed to AOCF FY82

MARINE CORPS

<u>Pilots YOS</u>	<u>FY82 Rates Actual</u>	<u>QRMC Projected FY82 Inventory</u>	<u>Actual FY82 Inventory</u>	<u>Gains Attributed to Bonus FY82</u>
5	.88			
6	.93	236	282	46
7	.97	219	224	5
8	.98	143	139	*
9	.96	196	195	*
10	.90	117	120	3
11	.99	162	166	4
12	.97	129	126	*
13	.99	164	167	3
14	.98	167	173	6
15	.98	166	166	*

67

NFO YOS

5	.88			
6	.93	47	47	*
7	.96	54	48	*
8	.94	44	32	*
9	.97	37	38	1
10	.88	30	31	1
11	.93	33	35	2
12	.98	35	36	1
13	.95	26	26	*
14	1.00	36	35	*
15	1.00	28	29	1

6

* Gains cannot be attributed solely to the bonus

The bonus yield on the AOCF contracts in YOS cell 6-10 increased significantly for FY82 (Table 10). On the other hand, the Services' gains in the 11-15 YOS cell were somewhat lower.

Table 10
FY82 AOCF Contracts

<u>NAVY</u>	<u>YOS</u>	<u>Contracts</u>	<u>Gains</u>	<u>Bonus Yield</u>
Pilot	6-10	806	214	27%
	11-15	590	80	14%
NFO	6-10	512	68	13%
	11-15	177	4	2%
<u>MARINES</u>				
Pilot	6-10	180	54	30%
	11-15	186	13	7%
NFO	6-10	214	2	1%
	11-15	215	4	2%

Both the Navy and the Marine Corps continued pilots and flight officers through use of AOCF that they would have otherwise lost. These gains have been significant for the Navy, which is now predicting a recovery from their manning deficits for NFOs in 1984; however, the projected "get well" period for pilots will not occur until 1989. This is just one year before the airlines are once again projecting significant pilot hiring.

For the Marine Corps, although AOCF had an overall positive effect, their shortages were in the 0-1/0-2 level aviators and stemmed from low training rates in 1978-1980, and a lack of sufficient training seats in 1981-1982. AOCF will not alleviate these shortages. Instead, the Marine Corps is relying on senior aviators to fill the void. We believe that the past application of AOCF assisted in retaining those senior and experienced aviators; however, in the future the Marine Corps must rely on adjustments in its training base to correct 0-1/0-2 shortages. In fact, the Marine Corps increased its Pilot Training Rate (PTR) from 382 in FY78 to 480 in FY83. They predict that this PTR, which will both optimize manpower and budgetary constraints and not over burden the training command and fleet replacement squadrons, will virtually eliminate company grade pilot shortages by FY87.

At this point it should be noted that there are other techniques available to validate the effectiveness of AOCF. Examining, by the length-of-services cell, the relationship between the number of eligibles and the number of aviators who actually accepted the bonus, elasticities could have been developed to predict aviator retention behavior. Unfortunately, data on eligibles by years of service are not available

for a more complete analysis. This results from several changes in eligibility criteria that occurred during the short period that the bonus was in effect.

2. Costs. Having determined that AOCF did yield a significant number of aviators, the question then becomes--was it worth the cost? Table 11 contains the cost of training various categories of pilots and NFOs (Radar Intercept Officer (RIO) and Bombardier Navigator (BN)) as reported by the Navy and the Marine Corps. Costs vary considerably. Some aviators incur a higher cost and a resulting increased cost savings, if retained.

Table 11
Aviator Training Costs
(\$000's)

<u>Service</u>	<u>Pilot</u>			<u>NFO</u>	
	<u>Jet</u>	<u>Prop</u>	<u>Helo</u>	<u>RIO</u>	<u>BN</u>
Navy	\$1,412	\$413	\$260	\$672	\$387
Marine Corps	671	207	216	489	324

The training costs displayed in Table 12 represent an average of individual training costs weighted by the proportion of training seats the skill represents (e.g., if 60% of the training seats were jet pilots while 40% were other categories, the training cost of a jet pilot was weighted accordingly). We assumed that pilot and NFO acceptance of AOCF was proportional to the population of their communities.

Training 12
Weighted Aviator Training Costs
(\$000's)

<u>Type Aviator</u>	<u>Navy</u>	<u>Marine Corps</u>
Pilot	\$777	\$404
NFO	581	375

An analysis of the cost effectiveness of AOCF in terms of training is shown in Table 13. Through AOCF, we estimate that the Navy saved \$368 million, while the Marine Corps saved \$12.5 million. However, the difference between the cost of training and the cost of AOCF could be considered as an actual cost savings only if one were willing to reduce training by that amount. The differences are more appropriately classified as a cost avoidance, that is, money that will not need to be spent some time in the future to correct mid-career manning shortages at the expense of aviator accessions training.

Table 13
AOCF Cost Analysis (\$Millions)

<u>FY81</u>	<u>Navy</u>	<u>Marine Corps</u>
AOCF Gains - Pilot	261	56
Training replacement costs**	\$203	\$23
AOCF Gains - NFO	83	8
Training replacement costs**	\$ 48	\$ 3
Cost of AOCF - FY81	\$ 26.4	\$ 7.6
<u>FY82</u>		
AOCF Gains - Pilot	287	67
Training replacement costs**	\$223	\$27
AOCF Gains - NFO	72	6
Training replacement costs**	\$ 42	\$ 2
Cost of AOCF - FY82	\$ 21.3	\$ 5.3
FY81 anniversary payments	\$ 20.5	\$ 6.7
<u>Navy Summary</u>		
Total training costs avoided (FY81 and FY82 above)	\$516	\$55
Total Cost of FY81 and FY82 contracts projected for total payments	\$150	\$43
ACIP not paid @ FY82 rates	\$ -2	\$-0.5
Estimated net cost of AOCF contracts	\$148*	\$42.5*
Estimated cost avoidance	\$368	\$12.5

* Net costing is based on projected yearly life-cycle costs of AOCF weighted by the number of recipients in various contract lengths. Subtracted from the projected costs are the offsetting costs of the extra ACIP rates that would have been applicable to aviators not receiving AOCF.

**Navy: pilot \$777K, NFO \$581K
Marine Corps: pilot \$404K, NFO \$365K

Some believe that cost savings should be offset by what is paid to the aviator in future basic pay, allowances, and retirement costs. We disagree; these are costs of doing business. They are expected to be spent to achieve and maintain the inventory levels required whether there is a requirement to access a new aviator or keep the experienced one. These would only become costs if inventory levels were exceeded. The true worth of that aviator is what it will cost to grow another one to the same level of performance as the one that was lost. Because of the myriad of factors involved, such a figure is difficult to derive. However, it is logical to assume that it would be significantly higher than the training costs indicated above, because these costs do not include the value of compensation and the advanced training and number of flying hours required to attain acceptable levels of experience.

AOCP is an effective means of retaining aviators in the critical 6-10 year zone. Significant gains were achieved for both the Navy and the Marine Corps. Through the AOCP program, the Services obtained 26,400 manyears of committed service. Examination shows both the Navy and Marine Corps programs experienced cost avoidance well over the total dollars spent on the AOCP program. Because FY81 was the first year of the bonus program, a large portion of those eligible took the bonus, inflating the cost, while smaller numbers accepted it in FY82.

3. Method of Payment. Are the current AOCP rates, as structured, appropriate? Since the bonus has been in existence less than two years, data are insufficient to determine if the actual dollar levels of the pay are the most effective. Clearly, the Services did not experience problems inducing a large percentage of the eligibles to accept the bonus; therefore, we believe the bonus pay structure is achieving the purpose of AOCP. However, there may be a more cost effective means to achieve equal or possibly increased bonus results. Through the use of personal discount rates (an individual's rate of preference for current over future income), analysis shows that the same retention results could be obtained by paying a reduced AOCP bonus as a lump sum rather than by paying via the current anniversary payment schedule. In other words, a dollar is worth more to individuals today than a dollar next year or in future years. Research conducted on personal discount rates of military personnel determined that the mean officer discount rate (without the effects of inflation) is 10.3%.⁷ The research further shows that the younger military personnel are, the discount rates of military personnel decrease with age, that is, younger personnel are more likely to be interested in money today than in the future.

Using the formula:

$$B_c = \sum_{i=0}^3 \frac{.25B_L}{(1+r)^i} ,$$

where B_c = total bonus under anniversary system
 B_L = lump-sum bonus
 r = discount rate plus an inflation factor

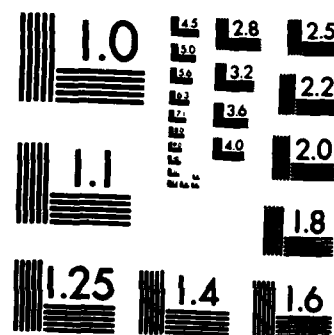
QUADRENNIAL REVIEW OF MILITARY COMPENSATION (5TH)
VOLUME 3 SPECIAL AND INCENTIVE PAYS(U) OFFICE OF THE
SECRETARY OF DEFENSE WASHINGTON DC NOV 83

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A 10x10 grid of squares. The top 8 rows are entirely black. The bottom 2 rows contain a few white squares: the 9th row has 2 white squares at the 3rd and 4th columns, and the 10th row has 1 white square at the 3rd column.



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

we can estimate the amount of a lump-sum bonus that would create the same aviator retention as the current anniversary payment system. For the purposes of this analysis, we chose a 5% and a 10% inflation rate to represent a possible range. Adding these inflation rates to the discount rate and then applying them with the formula, we can show that at 5% inflation, the AOCF payment could be reduced by 18% with no loss of retention through the use of the lump-sum payment. At 10% inflation, the reduction would be 22%. Calculations of bonus reductions are summarized in Table 14. Using this approach, the services could either reduce the bonus without a resulting loss of retention, or keep the same budget and pay more people, if needed.

Table 14
AOCF Payment Changes Under
Discount Rate Analysis

5% Inflation

$$1 = B_L \left[\frac{.25}{1.15} + \frac{.25}{(1.15)^2} + \frac{.25}{(1.15)^3} \right]$$

$B_L = .82$ (\$1.00 paid over 4 years is worth \$.82 today)
Change: 18% Reduction

10% Inflation

$$1 = B_L \left[\frac{.25}{1.20} + \frac{.25}{(1.20)^2} + \frac{.25}{(1.20)^3} \right]$$

$B_L = .78$ (\$1.00 paid over 4 years is worth \$.78 today)
Change: 22% Reduction

While the AOCF budget is increased in the year the lump sum is paid, a significant cost savings can be realized with such a payment plan. Approximately 35 million dollars could have been saved in the total FY81 and FY82 AOCF authorization if lump sum had been used. Furthermore, retention might even have increased in the mid-career shortage areas because more people prefer the up-front money at this early point in their careers. Additionally, lump sum avoids the sudden reduction of pay when the bonus stops from levels to which the recipient has become accustomed. The disadvantage of lump sum is the increased budget cost in the year obligated. For example, had FY81 AOCF been paid in a lump sum under 5% inflation, it would have required a budgeted amount of approximately \$74 million in that year. Anniversary payments for FY81 totaled \$34 million

for the Navy and the Marine Corps. However, costed out over the life of the FY81 bonus, anniversary payments total \$90 million. The lump sum could have resulted in savings of over \$16 million. Costs should be reflected in the year budgeted to avoid building increasingly high levels of anniversary payments if the bonus is used for extended periods. The cumulative effects of the anniversary payments will eventually total more than one year's total program.

B. APPROPRIATENESS OF CRITERIA.

1. Intent.

Are the currently established criteria for payment appropriate under current or projected conditions? Upon close examination of inventory and costing data, many would question why some personnel should receive the bonus when serious shortages may not exist; hence, a bonus may not be necessary to retain them in the service. The Senate Armed Services Committee was very specific in its intent in paying AOCF to differing groups. It stated:

"It is the committee's desire that the [AOCF] bonus be used as intended; that is, pilots, navigators and naval flight officers should all be considered for the bonus, but it [AOCF] should only be paid in aviation specialties where retention problems and shortages exist that cannot be addressed by other management action or initiatives. It should not be paid solely because it is being paid to the same or to other types of aviators in the same or in another service." Further, "The committee expects that within the Navy and Marine Corps, if the retention levels of one category of aviator cease to be a problem, then payment of the bonus to that category would cease even if payment to another category is warranted and continued."⁸

Since AOCF was designed to alleviate shortages of mid-career aviators, for this analysis "mid-career" has been defined to include grades O-3 and O-4.

2. Application. Inventory data provided by the Services (Tables 3 and 4) shows that at the end of FY82, only Navy pilots remain significantly under strength in mid-career aviators. Table 15 contains the inventory-to-authorization ratios of Navy mid-career billets. Even though pilot levels have significantly improved, there is still a need to pay AOCF to meet requirements. Figure 2 shows that due to AOCF, we are keeping pilots longer.

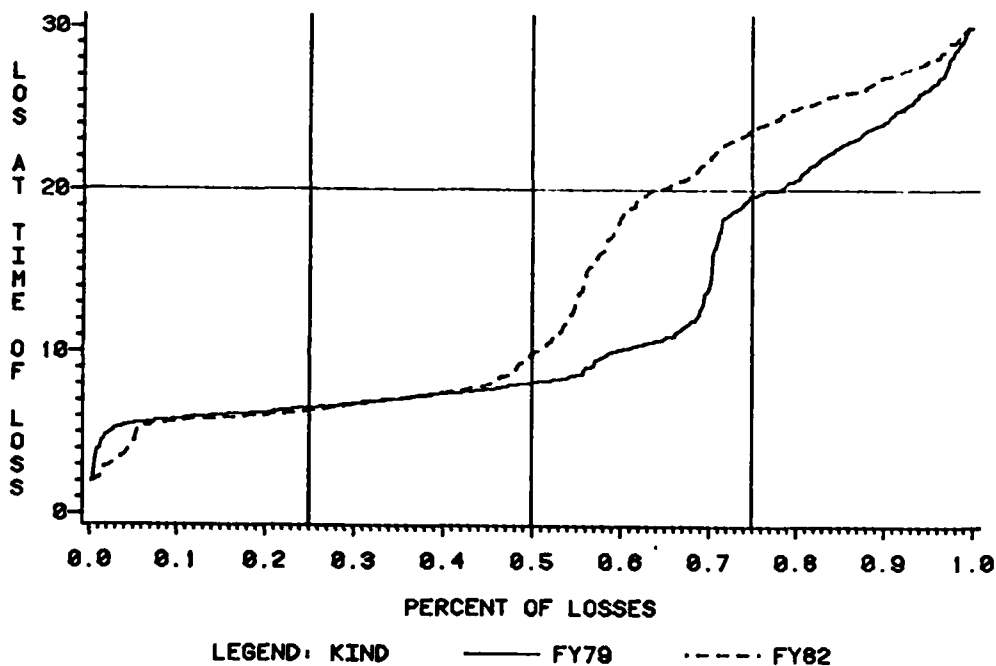
Table 15
Navy Aviation 0-3/0-4
Inventory-to-Authorization Ratios
FY81-82

	PILOTS			NFOs		
	Authorized	Inventory	%	Authorized	Inventory	%
FY81	7,516	5,596	74%	3,010	2,939	98%
FY82	6,541	5,766	88%	2,844	2,975	105%

Figure 2

NAVY PILOT LOSSES

QUANTILE PLOT



In FY79, 50 percent of the pilots lost had less than 8 years of service while in FY82, the same percentage of pilots lost had less than 10 years of service. However, not all categories of pilots are experiencing the same degree of shortages. The propeller and helicopter aviation communities are not as significantly under strength as are jet pilots (Table 16). Furthermore, helicopter pilots do not have the enticement of the commercial airlines that propeller and jet pilots do.

Table 16
NAVY PILOT 0-3 - 0-5
Inventory-to-Authorization Ratios

	<u>JET</u>	<u>PROP</u>	<u>HELO</u>
<u>FY81</u>			
Authorized	4,036	3,007	2,301
Inventory	2,762	2,476	1,744
Ratio	68%	82%	76%
<u>FY82</u>			
Authorized	3,531	2,632	2,013
Inventory	2,827	2,387	1,807
Ratio	80%	91%	90%

Many argue that when shortages are alleviated in one pilot community, AOCB should stop. While this is consistent with the intent of AOCB, sufficient data are not currently available to determine the actual retention patterns of the different aviation communities. It is inconsistent with the purpose of a bonus to pay all categories simply because like personnel are receiving a bonus. This has not been done with the enlisted bonuses and has caused no serious morale problems. Sufficient data must be maintained to properly analyze the retention patterns as they relate to strength in the various aviator communities. Once inventory levels in one community are sufficient, payment to that community should be discontinued.

The Services agree that they need the flexibility to transfer aviators between skills. This "cross-detailing" in itself helps to alleviate manning problems, as it allows critical specialties to be filled from other, more adequately manned billets. Prohibiting payment of a bonus to one or more of the aviator communities should not prevent this cross-detailing. It is unlikely that personnel from shortage specialties that receive a bonus would be transferred out to a specialty that has an adequate inventory and, thus, no bonus. Likewise, if an aviator from an overage skill is cross-detailed to a bonus skill, he could then qualify for ACOP in that community.

As for NFOs, the economy has some effect on their retention, but they do not experience the draw to the airlines similar to that of pilots. Only 0-3's and 0-5's are facing slight inventory deficiencies. The 0-5 authorization shortfalls were the result of authorization increases (from 478 in FY80 to 744 in FY81) when many pilot billets were converted to NFO status in an attempt to alleviate the pilot shortages. By retaining higher levels of 0-3 and 0-4 NFOs, the Navy not only will be able to fill these 0-5 billets with more junior officers, if needed, but also "grow" more 0-5's for future utilization in these billets, since it is likely that personnel induced to stay by the bonus will continue after the bonus period. Furthermore, the Navy currently fills some pilot billets with NFOs as a means of releasing pilots to fill operational

positions. These are authorizations that cannot be converted to an NFO because of problems that would arise with the sea-shore rotation scheme for pilots. As the pilot strengths improve, they will again be filled by pilots.

The bonus program for NFOs has been effective, in terms of both inventory and costs. Overall strength has improved from 93% in FY79 to 105% in FY82, allowing the "up and down" and cross-detailing that is necessary. Figure 3 shows that of the NFO losses in FY79, half were personnel with less than 7 years of service, while in FY82, after almost 2 years of a bonus program, half of the Navy's NFO losses had up to 13 years of service, indicating that the Navy is now keeping its NFOs longer, enabling them to use the increased levels of experience to alleviate overall aviator shortages. Additionally, the Navy NFO bonus program has paid for itself. The FY81 program for NFOs has a life-cycle cost of about \$27 million. To have trained new NFOs to replace those that may have been lost would have cost \$48 million. We believe that it is appropriate to extend AOCF to NFOs until inventories reach the point at which they are no longer needed to perform duties of other aviator positions. Since pilots in grades typically cross detailed (O-3 to O-5) are about 10% under strength, we believe an appropriate level for NFO inventory-to-authorization ratio would be about 110%. However, once this level is reached, AOCF should be discontinued, regardless of whether other aviators continue to draw the bonus.

The Marine Corps aviator inventories for O-3's and O-4's are reflected in Table 17. These data show that no significant shortages have existed since FY79 in the Marine Corps mid-career aviator communities where bonuses have been targeted. Overall inventory, however, was low (Table 4) because of the O-1 and O-2 shortfalls. For pilots, this is the result of a shortage of training slots available. As shown in Figure 4, the bonus has been important in achieving a higher experience level to substitute for these shortages. For pilots, an increase occurred in

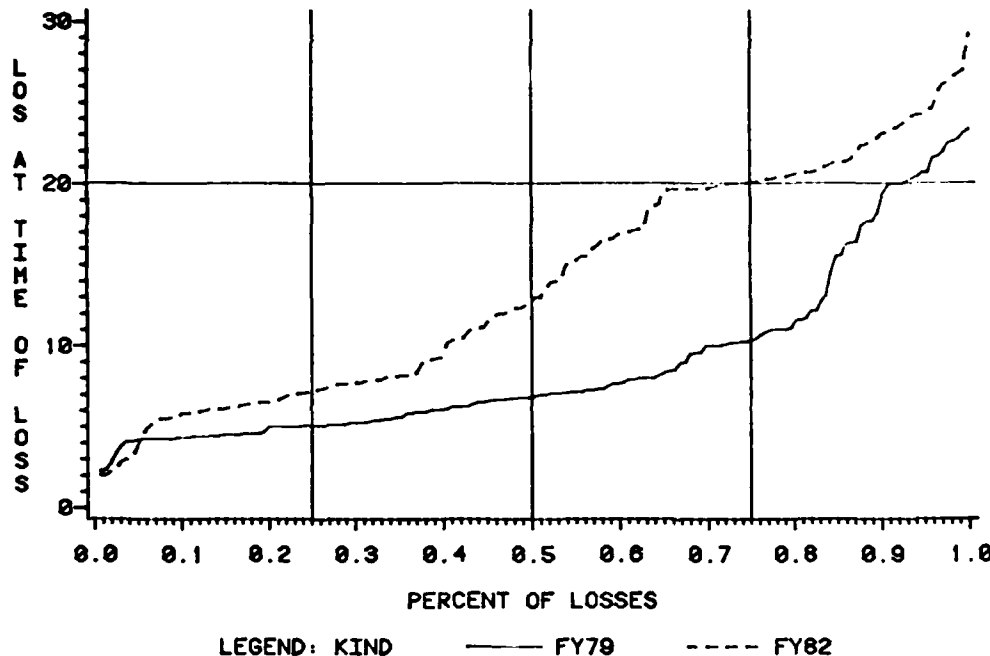
Table 17
Marine Corps Aviation Inventory-to-Authorization Ratios
O-3, O-4 Billets FY79-FY82

FY	PILOTS			NFOs		
	AUTHORIZED	INVENTORY	%	AUTHORIZED	INVENTORY	%
79	1816	2035	112%	436	433	99%
80	1822	2130	117%	429	464	108%
81	1884	2115	112%	397	448	113%
82	1855	2200	119%	389	434	112%

Figure 3

NAVY NFO LOSSES

QUANTILE PLOT



FY82 in the median length of service at time of loss. The steep upward slope of the FY82 plot indicates that losses slowed significantly in 10-to-20 YOS personnel. While this experience is desirable, the bonus is not the proper method to correct training shortage problems. That must be done by increasing the training base. Raising inventories in already over strength grades will only serve to increase manpower costs as more personnel have to be paid at higher pay levels and more will likely continue to retirement, thereby increasing retirement costs.

Marine NFOs have not had shortages in the mid-career years of service since 1980. While the NFO total inventory is under 100% of authorizations (Table 4), these shortages are in the 0-1/0-2 billets. This is a result of low training output due to the planned reduction of NFO authorizations as programmed weapon systems are brought on line (Table 18). Total authorizations are expected to decline from 716 in FY83 to 564 in FY87. The bonus will not solve the inventory problems resulting from this planned reduction. However, AOCF has helped keep experienced NFOs in the Marine Corps to provide an orderly transition during the phase in of new aircraft. Figure 5 shows that the median years of service at time of loss for NFOs increased in FY82 when compared

Figure 4

MARINE CORPS PILOT LOSSES QUANTILE PLOT

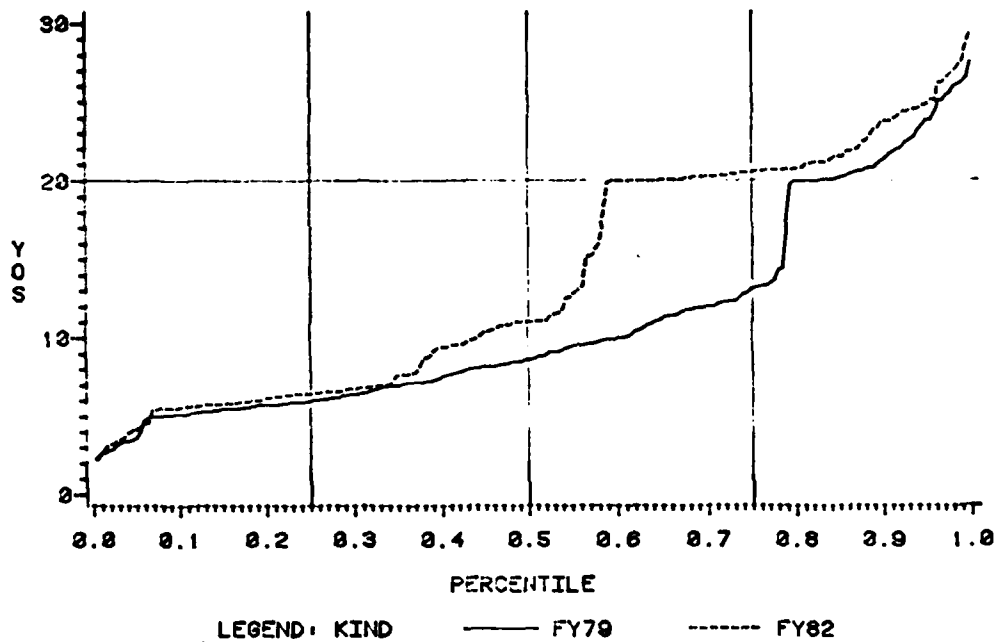


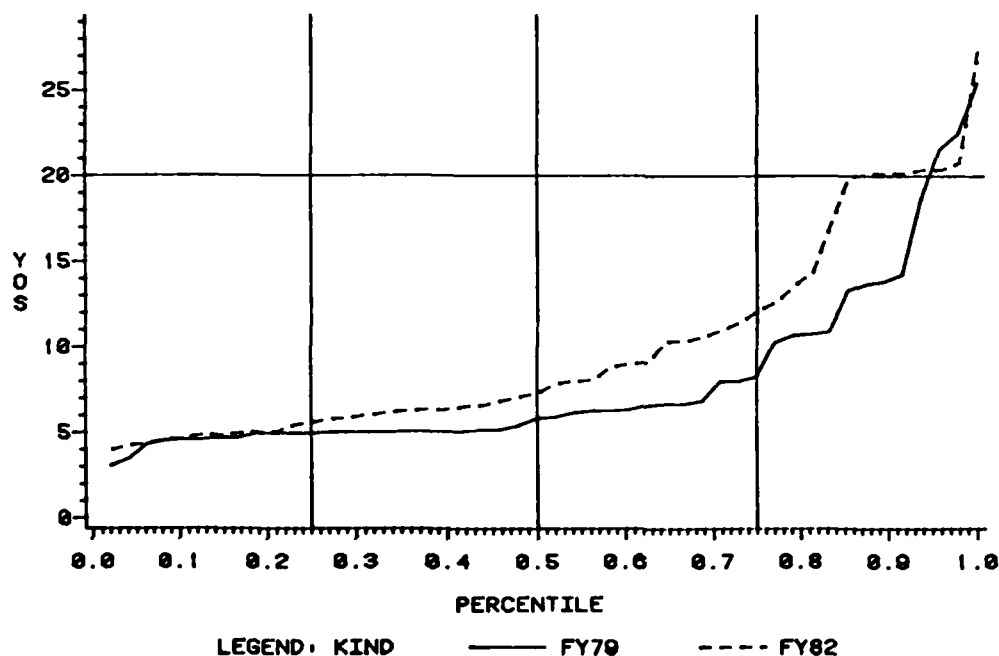
Table 18
Marine NFO Training Rates

<u>FY</u>	<u>PLANNED TRAINING</u>
77	100
78	100
79	100
80	82
81	55
82	40
83	40
84	40
85	30
86	30
87	30

to FY79. As was the case for the pilots, however, the same problems arise when senior grades are exceeded to cover O-1/O-2 shortages. In addition, the Marine NFO bonus cost, based on computation of gains, was not effective, since the program life costs were \$4.5 million compared to a \$2 million savings.

Figure 5

MARINE CORPS NFO LOSSES QUANTILE PLOT



3. Marginal Costs. Other factors to be considered are the applications of the bonus in the Services that use it. Analysis shows that a more cost effective means of applying the bonus would be to identify the critical years of service shortages. For instance, little was gained in FY 82 from giving AOCP to aviators with greater than 10 years of service. In fact, the marginal cost per gain exceeded the cost of training replacements except for the Navy in FY 82. Table 19 summarizes the Service's gains in these YOS cells.

Table 19
Gains Attributable to AOCF - 11-15 YOS

<u>NAVY</u>	<u>#of gains</u>	<u>#of contracts</u>	<u>Estimated Marginal Costs(\$000)</u>
FY81	44	2,192	\$759
FY82	84	747	267
<u>MARINE CORPS</u>			
FY81	19	1,162	\$558
FY82	17	401	476

It is likely that the majority of those retained by AOCF would have continued in the Service for at least the period of their contracts. These personnel are outside of the major decision point. Although a minor decision point is evident at YOS 10-13, we believe AOCF currently does not have a significant impact. Moreover, keeping additional aviators at the mid-career point will most likely increase the inventory of the 11+ YOS groups as they move through the system. We are not saying that the gains achieved with AOCF in the 11-15 YOS groups are of no value. On the contrary, senior officers are often used to fill shortages in mid-career areas. It is simply not a cost-effective means of increasing retention in those YOS cells. Although Congress intended to avoid pay inversions in the senior grades by allowing for an orderly reduction in pay, pay inversions exist now in other specialties. We do not believe such inversions would adversely affect retention in the senior grades.

Since AOCF was of limited value and not cost effective for personnel with 11 or more years of service, it should not be extended to these personnel. However, during periods of high levels of airline hiring, continuation rates have declined significantly in these YOS cells. When needed, AOCF could then be applied to this group. Targeting to critical YOS is justified; however, qualifying year-of-service cells should be adjusted as needs arise. Analysis indicates that the 6-to-10 YOS cell is and will remain under strength. Therefore, the bonus should apply only to those personnel who have at least 6 but less than 11 years of active duty. In addition, since Navy data show that the majority of 1- and 2-year contracts were signed by personnel with 11 or more years and that little would be gained by retaining midgrade personnel for only 1 or 2 additional years, the 1- or 2-year bonus commitment should not be an option. (The 1-year bonus rate was previously recognized as having limited value and was discontinued in 1982.) A three- or four-year commitment at current rates is more attractive to personnel and is more effective than other options. These changes to the AOCF program would protect the integrity of the bonus program by being more effective for the least cost.

C. THE FUTURE. Is there a need for AOCF in the future? When applied properly, AOCF can be a very effective program. The Navy projects pilot shortages through the 1980's. A practical means of alleviating these shortages is needed. Currently, the airlines are predicted to increase hiring no later than 1990, the economy seems to be improving and Service strengths are expected to increase. These factors could prevent the Services from meeting their aviation requirements in both pilots and NFO/navigation. Without available incentives to persuade personnel to continue in the Service, inventories could continue to be a problem, especially for the Navy. Historically, during periods of airline hiring, a major decision point has occurred in the 10-to-13 YOS cell, as established by the ACIP study. It is reasonable to believe that this decision point will once again exist during the projected hiring increases. A second bonus opportunity may be necessary to increase retention in these YOS cells. Furthermore, personnel who take the bonus should be more likely to remain on active duty. Analysis has shown that a bonus plan is a more cost-effective means of addressing the types of manning problems identified in this study than increasing ACIP.⁹ If ACIP is increased in the future, however, the ACIP rate for AOCF recipients should be reviewed to determine appropriate levels. AOCF is an excellent plan to insure that, when other actions are not effective, a means exists to assist in correcting aviator deficiencies.

VI. FINDINGS.

A. AOCF for the Navy has been effective in terms of retention and cost avoidance. Both pilots and NFOs should continue to receive AOCF until inventory levels are adequate. Aviator inventories levels should be reviewed annually to determine continued need.

B. Although AOCF for the Marine Corps assisted in retaining experienced pilots, it will not solve current Marine Corps shortages. Analysis indicates that AOCF is not currently appropriate for Marine Corps pilots and NFOs. However, pilot and NFO inventories should be reviewed periodically to determine the future need of AOCF in preventing or correcting mid-career shortages.

C. Payment of AOCF to aviators with more than 11 years of service did not significantly decrease aviator shortages. Unless retention becomes a problem in these YOS cells, payment should be limited to a single AOCF bonus to aviators with 6 through 10 years of service. However, it may become necessary to offer a second bonus opportunity in the 10-15 YOS cells during periods of increased airline hiring.

D. One- and two-year AOCF contracts are not an effective means of increasing retention in the critical mid-career years (6-10 YOS). Contracts in these YOS cells should be established at 3- and 4-year minimum commitments.

E. Lump-sum payments appropriately discounted would be more cost effective and more productive than the anniversary payment schedule.

F. If ACIP rates are adjusted for nonbonus recipients, ACIP levels for AOCB recipients should be reviewed.

G. Data on aviation communities should be maintained to enable evaluation of bonus applicability to the various communities.

H. AOCB should be continued for future use, when other actions are not effective, to assist in alleviating Service aviator shortages.

VII. RECOMMENDATIONS.

A. Continue AOCB to Navy Pilots and NFOs until inventory levels are adequate.

B. Discontinue offering new AOCB contracts to Marine Corps Pilot and NFOs until necessary to prevent or correct future mid-career shortages.

C. Amend Title 37 U.S.C. 301 b(a)(4) and 301b(a)(5) to limit AOCB eligibility to aviators with 6 through 10 years of service and establish 3- and 4-year minimum contract lengths.

D. Pay AOCB as a lump-sum bonus.

E. Maintain data by aviation community to enable evaluation of bonus applicability to the various communities.

F. Establish a periodic review of AOCB and aviator inventories to determine if eligibility criteria are valid and if further use of AOCB is necessary to prevent or correct mid-career shortages of pilots, NFOs or both, in any service.

References

1. House Report No. 96-1233 (Committee of Conference), accompanying H.R. 5168, 96th Congress, 2nd Session, p. 15, 1980.
2. Senate Report No. 97-146, accompanying S. 1181, 97th Congress, 1st Session, p. 9, 1981.
3. Ibid, pp. 9-10.
4. Ibid, p. 10.
5. Ibid, pp. 9-10.
6. Congressional Record-Senate 98th Congress, 1st Session, S4191-S4192, April 6, 1983.
7. Black, Dr. Matthew, Personal Discount Rates: Estimates for the Military Population, Systems Research and Applications Corporation Study for 5th QRM, May 17, 1983.
8. Senate Report No. 97-146, Uniformed Services Pay and Benefits Act of 1981, 97th Congress, 1st Session. p. 9, 1981.
9. Kleinman, Samuel D, Zuhaski, Charles, CDR., USN., Navy Pilot Attrition: Determinants and Economic Remedies, Center for Naval Analysis, pp. 15-16, Feb 1980.

Other Sources

Compensation Elements and Related Manpower Cost Items Their Purpose and Legislative Background, Military Compensation Background Papers, Second Revised Edition, Office of the Secretary of Defense, July 1982.

Millions Spent Needlessly In Navy and Marine Corps' Aviation Bonus Program, Report by the Comptroller General of the United States, General Accounting Office, August 9, 1982.

The Navy's Pilot Shortage: A Selective Bonus and Other Actions Could Improve Retention, Report to Congress by the Comptroller General of the United States, General Accounting Office, February 15, 1980.

OUTSIDE AGENCIES AND FIELD INTERVIEWS

Information Requested From:

Responded

American Airlines, Inc.	
Air Force Association	X
Airline Pilots Association (ALPA)	
Association of Naval Aviation	X
Combat Pilots Association	
Commuter Airline Association	
Council of Economic Advisors	X
Delta Airlines	
Eastern Airlines	
Future Aviation Professionals of America (FAPA)	X
Helicopter Association International	X
National Air Transportation Association, Inc.	
National Business Aircraft Association	X
National Pilots' Association	
Piedmont Airlines, Inc.	
Professional Pilot Magazine	X
United Airlines, Inc.	X
Western Airlines, Inc.	

Field Interviews:

Andrews Air Force Base, MD
 Coast Guard Air Station, Elizabeth City, NC
 Dover Air Force Base, DE
 Langley Air Force Base, VA
 March Air Force Base, CA
 Marine Corps Air Station, Cherry Point, NC
 Marine Corps Air Station, El Toro, CA
 Naval Air Facility, Andrews AFB, MD
 Naval Air Station, Miramar, CA
 Naval Air Station, North Island, CA
 Naval Air Station, Oceana, VA
 Naval Air Station, Patuxent River, MD
 USS Eisenhower
 USS Kitty Hawk

SUMMARY OF RESPONSES

Aviation Officer Continuation Pay

Issues:

1. Navy Pilots and NFOs should continue to receive AOCF until inventory levels are adequate.
2. AOCF cannot solve current Marine Corps shortages of either pilots or NFOs.
3. Unless retention becomes a problem, AOCF contracts should be limited to aviators with 6 through 10 years of service.
4. AOCF contract lengths should be at a minimum of 3- and 4-years.
5. Lump-sum payments are more effective.
6. Aviator manning levels should be monitored for continued or future use of AOCF by the Services.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs. Suggested rewording of Finding 2 to eliminate reference to pilot and NFO training adjustments. Recommended minor rewording of Findings 3 and 5 to clarify second bonus opportunity and discounting of lump sum payments.
Air Force	Interposes no objections; however, defers to the Department of the Navy.
Coast Guard	Concurs.
Public Health Service	Concurs.
NOAA	Concurs.
JCS	Concurs.

LEGISLATIVE IMPLICATIONS

Aviation Officer Continuation Pay

1. Amend 37 U.S.C. 301b(a)(4) to limit AOCF eligibility to aviators with 6 through 10 years of service.
2. Amend 37 U.S.C. 301b(a)(5) to establish 3- and 4-years as the minimum contract lengths.

37 U.S.C. 302b
SPECIAL PAY: DENTISTS

37 U.S.C. 311
SPECIAL PAY: CONTINUATION PAY FOR DENTISTS
IN THE ARMED FORCES

SPECIAL PAY FOR DENTISTS

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SPECIAL AND CONTINUATION PAYS FOR DENTISTS

I. PURPOSE. To provide additional pays for officers of the Army or Navy Dental Corps or officers of the Air Force or Public Health Service who are designated as Dental Officers, thereby increasing the ability of the Uniformed Services to attract and retain officer volunteers in the discipline of Dentistry.

II. DATA SOURCES. Data were provided primarily by the Service Staffs of the Army, Navy, Air Force, Public Health Service and the Defense Manpower Data Center. Additional background field interviews were conducted at Fort Bragg, N.C., Fort Jackson, S.C., Portsmouth Naval Regional Medical Center, Portsmouth VA, and the National Naval Medical Center, Bethesda, MD.

III. HISTORICAL PERSPECTIVE.

The origin of the Special Pay for Dentists can be traced to the Army-Navy-Public Health Service Medical Officer Procurement Act of 1947 which established a precedent by authorizing a payment of \$100 per month above normal pay to physicians and dentists. While the stated intention of this Act was as summarized in paragraph I above, Congress also acknowledged that the pay was provided as compensation for tuition and income lost while in medical or dental school¹.

From its inception the extra pay for physicians and dentists (later including optometrists and veterinarians) had a cut off date or time constraint imposed on it. The term cut-off date was the date after which persons being accessed for the medical skill would not be authorized to draw the additional pay. For example, when the pay was first authorized for physicians and dentists in 1947 the law stated that all those regular officers commissioned before 1 September 1952 would be authorized to draw the pay. By default anyone commissioned after that "cut-off date" would not be authorized to draw the pay, while those commissioned before that date would continue to draw the pay. Repeatedly, Congress extended the cut-off date on or about the time it was due to expire. (At Appendix A is a chronological list of the legislative extensions and pertinent Congressional actions associated with the Special Pay for Dentists.)

The Special Pay for Dentists was first modified by the Career Compensation Act of 1949 which, at the recommendation of the "Hook" Commission, barred dental interns from receiving the special pay.² The second modification occurred with the Act of 30 April 1956, which changed the pay from a flat rate of \$100 per month to one based on length of dental service as depicted in Table 1.

Table 1
Special Pay for Dentists (1956-1962)

<u>Amount</u>	<u>Length of Dental Service</u>
\$100/Month	Less than 2 years
\$150/Month	More than 2 years and less than 6 years
\$200/Month	More than 6 years and less than 10 years
\$250/Month	More than 10 years

In addition, this Act instituted the practice of awarding dental officers four years of constructive credit for promotion and pay purposes upon commencement of active duty. The net result was to raise dramatically the overall amount of basic pay in order to reduce the high rate of loss of dental officers³. The Uniformed Services Pay Act of 1963 raised the Special Pay rates for Dentists with between 6 and 10 years of active duty from \$200 to \$250 a month and the rate for those over 10 years active duty from \$250 to \$350. Table 2 shows the monthly rates of Special Pay for Dentists as they have existed from the passage of this Act until the present.

Table 2
Special Pay for Dentists (1963-Present)

<u>Amount</u>	<u>Length of Dental Service</u>
\$100/Month	Less than 2 years
\$150/Month	More than 2 years and less than 6 years
\$250/Month	More than 6 years and less than 10 years
\$350/Month	More than 10 years

The Uniformed Services Health Professionals Special Pay Act of 1980 generated the most recent change to the Special Pay for Dentists. This law made the special pay permanent and negated the requirement to periodically extend the cut-off date. Statutory authority for Special Pay for Dentists is codified in 37 U.S.C. 302b.

Additional compensation in the form of Continuation Pay for Dentists originated with the Act of December 16, 1967. This Act provided for the payment of up to four months additional basic pay to a medical or dental

officer, if that officer:

- is serving on active duty in a critical specialty designated by the Secretary of Defense.
- has completed his initial active-duty obligation.
- executes an active duty agreement for at least one additional year.

While payments of Continuation Pay to physicians began immediately, it was not until late 1972 that dentists also received the pay. This delay was based on the rationale that Continuation Pay should be used in a manner similar to the reenlistment bonus for enlisted personnel and that the retention problem associated with dentists (prior to 1972) was not sufficiently severe to warrant the payment of Continuation Pay.⁴ It should be noted, however, that the term "critical specialty" has been so liberally interpreted that virtually all dentists completing their initial active duty obligation, who agree to stay on active duty for an additional year, receive Continuation Pay.

The Uniformed Service Health Professional Special Pay Act of 1980 removed the authority for physicians to receive Continuation Pay and froze the DoD regulation pertaining to Continuation Pay as it existed on 1 April 1980. The major impact of this freeze was that the rates of basic pay upon which Dental Continuation Pay are computed were permanently fixed at the 1 October 1979 level. Table 3 depicts the number of months of basic pay authorized by grade for Dental Continuation Pay.

Table 3
Number of Months Basic Pay by Grade

<u>Pay Grade</u>	<u>Multiple</u>
O-8	2 Months
O-7	3 Months
O-6	4 Months
O-5	4 Months
O-4	4 Months
O-3	4 Months

Dental Continuation Pay is paid in equal annual or semiannual installments as determined by the Secretaries of the respective Services. The Air Force, Navy and Public Health Service all Pay Dental Continuation Pay in annual lump sums only. The Army allows the individual dentist to choose either annual or semiannual payments. Dental Continuation Pay is codified in 37 U.S.C. 311.

IV. METHODOLOGY. The first section of this analysis will address the total population of recipients of the Special Pay and Continuation Pay for Dentists and define the specific composition for each Service. The

second section will discuss the manning and other personnel factors which could be related to the pays. The third section will compare the pay of military vis-a-vis civilian dentists.

V. ANALYSIS.

A. COMPOSITION. Table 4 depicts the number of DoD Special and Continuation Pay recipients and the associated costs. Amounts and personnel are broken out by the type of pay received. Some general observations concerning the composition of the dental officer community can be made using this table. For example, since all DoD dentists receive Special Pay, the size of the Dental Officer population from FY72 through FY84 is represented by that column. By using the number of Special Pay recipients as the denominator, one can see that in FY73 approximately 32 percent of the dentists in DoD received Continuation Pay. By FY84 it is estimated that 64 percent of the DoD dentists will receive Continuation Pay. This indicates that the general composition of the DoD Dental Officer force has become older. It also is an indication that the retention of DoD dentists beyond their initial obligation is much better now than it was in FY73.

Table 4
DoD Special and Continuation Pay for
Dentists (Personnel and Costs)

FY	SPECIAL PAY		CONTINUATION PAY	
	PERSONNEL	COSTS(\$000)	PERSONNEL	COSTS(\$000)
1972	6,016	\$ 13,704	0	\$ 0
1973	6,164	13,737	2,009	11,893
1974	5,625	13,006	2,106	12,701
1975	5,294	12,520	2,099	14,127
1976	5,216	12,654	2,192	15,302
1977	5,084	12,405	*	*
1978	4,950	12,380	2,156	17,657
1979	4,960	12,475	2,156	18,632
1980	5,028	12,604	2,769	23,791
1981	4,931	12,854	2,999	24,919
1982	4,999	13,026	3,080	25,580
1983(est)	5,088	13,272	3,195	26,350
1984(est)	5,105	13,262	3,243	26,773

*Data unavailable

Table 5 shows the same data broken out by Uniformed Service for FY81 through FY84. For both pays the proportion of costs and numbers of personnel between Services have remained relatively constant over time. The Air Force and Navy appear to be slightly increasing the number of personnel who receive the dentist pays while the Army seems to have leveled off. The drop in Public Health Service is the direct result of PHS closing of eight hospitals and several outpatient clinics in 1981.

Table 5
Special Pay and Continuation Pay
for Dentists (Personnel and Costs) by Uniformed Service

FY	SERVICE	SPECIAL PAY		CONTINUATION PAY	
		PERSONNEL	COST(\$000)	PERSONNEL	COST(\$000)
81	ARMY	1791	4740	983	8694
	NAVY	1651	4351	1082	9045
	USAF	1489	3763	934	7179
	PHS	971	2049	518	4305
	TOTAL**	5902	14903	3517	29224
82	ARMY	1796	4754	1041	9209
	NAVY	1669	4396	1038	8676
	USAF	1534	3876	1001	7695
	PHS	824	1897	461	3830
	TOTAL**	5823	14923	3541	29410
83	ARMY	1789	4737	1022	9008
	NAVY	1709	4468	1042	8686
	USAF	1590	4067	1131	8656
	PHS	820	1880	460	3826
	TOTAL	5908	15152	3655	30176
84	ARMY	1789	4737	1022	9008
	NAVY	1714	4406	1100	9236
	USAF	1602	4119	1121	8529
	PHS	820	1880	460	3826
	TOTAL	5925	15142	3703	30599

** Totals will differ from Table 1 due to the inclusion of Public Health Service data.

B. PERSONNEL CONSIDERATIONS. Table 6 shows the manning data for dentists by Service for FY79 through FY82. The data in the table reveals that dentists have not been seriously undermanned and at the present, the manning situation is excellent. The slight downward trend in manning exhibited in FY81 and FY82 is the direct result of the previously mentioned PHS drawdown in facilities and personnel.

Table 6
Manning Data - Dentists

Service	FY79		FY80		FY81		FY82	
	Auth	Assign	Auth	Assign	Auth	Assign	Auth	Assign
Army	1823	1861	1821	1830	1823	1818	1815	1785
Navy	1671	1720	1675	1664	1635	1638	1690	1683
USAF	1563	1509	1575	1579	1507	1503	1590	1590
PHS	**	**	**	**	1033	971	877	824
Total	5057	5090	5071	5073	5998	5930	5965	5882

**Unknown.

Figure 1 depicts the cumulative percentage losses for the separate categories of all Health Professionals (for the purpose of this analysis this excludes nurses; it includes physicians and allied medical fields, all officers in DoD and dentists over a 30 year career). These rates were computed using aggregate loss data spanning the period of FY79 through FY 82. Accordingly, they represent the average cumulative losses for those fiscal years and are useful in judging the likelihood of individuals to leave the Services at different points in a career. It also shows what the Services have indicated as their desired cumulative loss rate for dentists.

The conclusion which can be drawn from this figure is that during the first 10 years of service, dentists leave at a rate which is much higher than either all officers in DoD or all Health Professionals. In addition, it is clear that through the 6th year of service dentists leave active duty at rates much higher than those desired. Beyond that point, however, the actual cumulative loss rates approximate the desired cumulative loss rates.

Figure 1

COMPARATIVE CUMULATIVE LOSS RATES

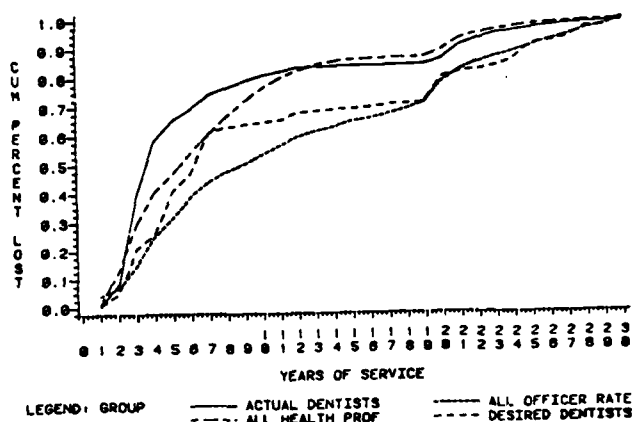


Figure 2 shows a comparison of cumulative loss rates for two years before and two years after the implementation of the Uniformed Services Health Professional Special Pay Act of 1980. As can be seen, there has been little change in loss patterns over this period of time. This is not surprising when considered in light of the fact that the only change to dentists' pay which the Act affected was the freezing of Dental Continuation Pay at the 1 Oct 1979 rates.

Figure 2

DENTAL OFFICER CUMULATIVE LOSS RATES
BEFORE AND AFTER 1980 USHPSP ACT

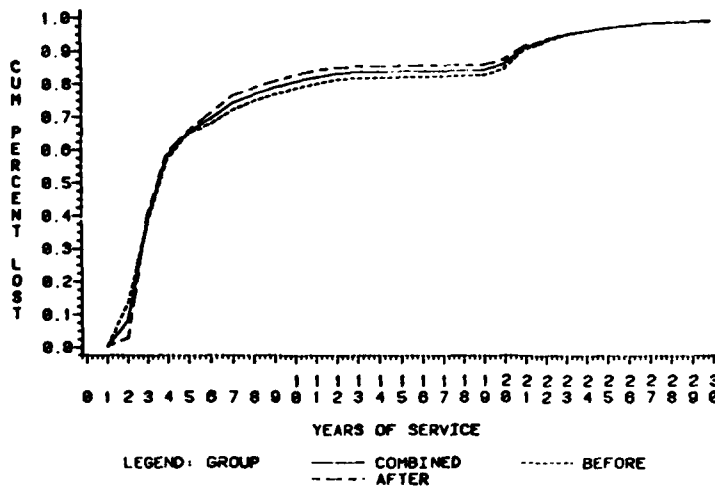
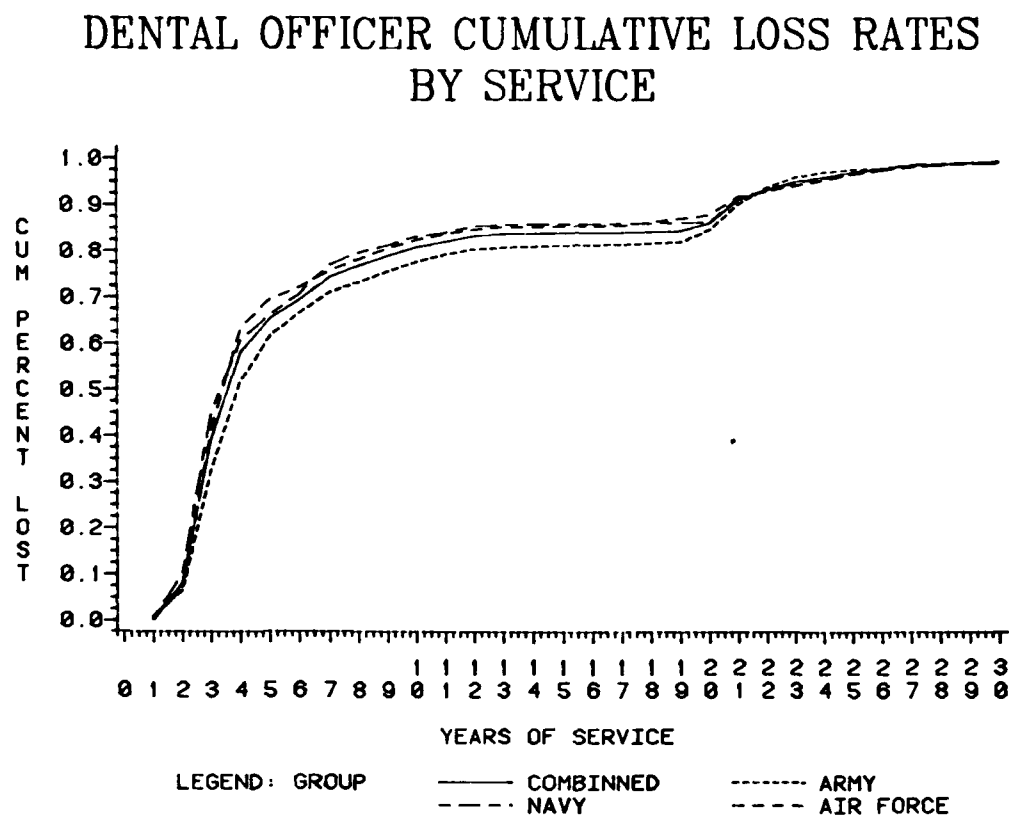


Figure 3 shows the cumulative loss rate broken out by Service for FY 1979-1982. Little difference among Services can be discerned.

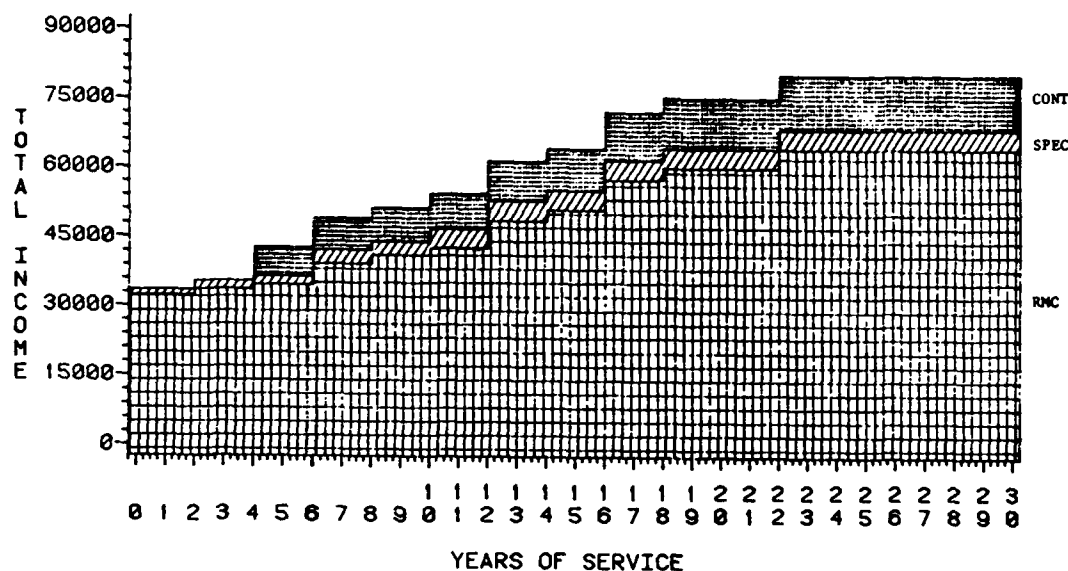
Figure 3



C. PAY COMPARISON. Figure 4 shows the dental officer pay profile as of 1 Oct 1982. Total income is the amount of compensation a military dentist would receive at a given year of service, assuming due course promotions. This compensation is the sum of the average regular military compensation (RMC as of 1 Oct 1982), Special Pay and Continuation Pay. Although the figure suggests that Dental Officers are compensated quite well, as will be shown below, their income lags behind that of their civilian counterparts for the first 20 years of their careers.

Figure 4

DENTAL OFFICER PAY PROFILE AS OF 1 OCT 1982



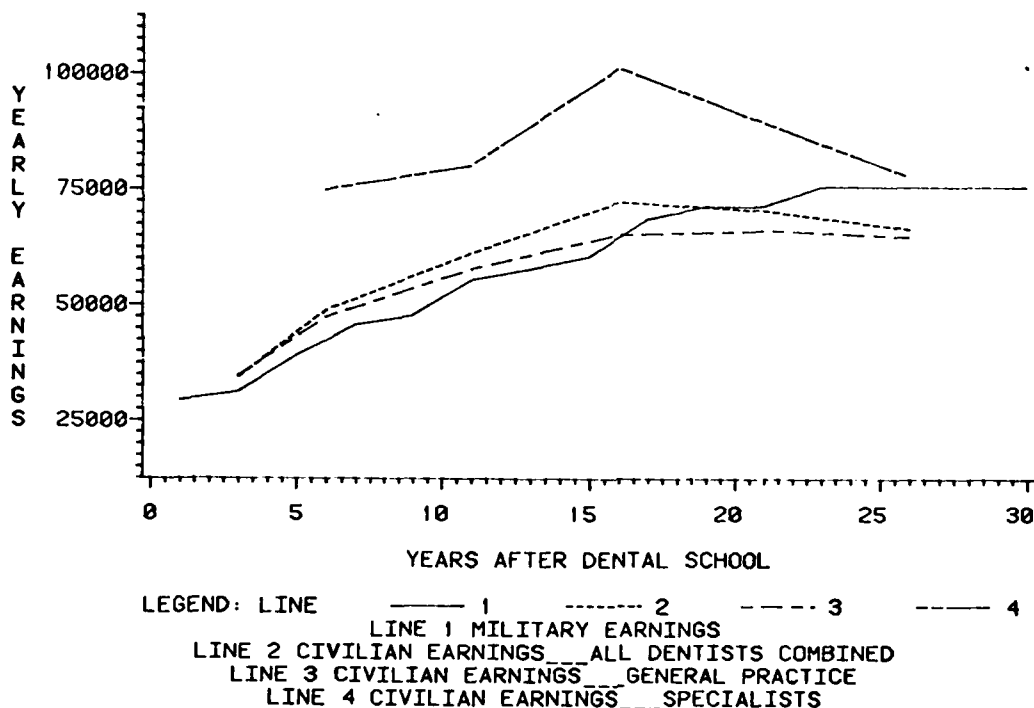
$$\text{TOTAL INCOME} = \text{RMC} + \text{SPEC PAY} + \text{CONTINUATION PAY}$$

Figure 5 shows the comparison between earnings in the civilian sector and the military sector. The data for the 1981 civilian earnings were obtained from a 1982 survey of dentists conducted by the American Dental Association (ADA).⁵ The mean income of three groupings of dentists are depicted: those in general practice, dentists in specialist practice and all dentists combined. Military earnings are developed in the same manner as those in Figure 4, with the exception that calendar year 1981

earnings were computed using 75 percent of the FY81 Regular Military Compensation and 25 percent of the FY82 Regular Military Compensation. (Military income was based on the calendar year in order to correspond to the civilian earnings data obtained from the ADA). The plot of these data shows that military earnings lag behind those of the civilian sector through the 17th year where they surpass those of dentists in general practice. The earnings of military dentists do not equal the average of all dentists until the 20th year after graduation from dental school. The earnings of military dentists equal those of civilian dental specialists 25 years after completion of dental school. This is a function of the decline in civilian dental specialists' income and not of an increase in pay for military dentists.

Figure 5

MILITARY TO CIVILIAN PAY COMPARISON DENTISTS CALENDAR YEAR 1981



The earnings of military dentists depicted in Figure 5, are based on the premise that the dentist is a specialist by at least 20 years after dental school. If a military dentist has not obtained a specialty by the 20th year of service the amount of Continuation Pay received is, by regulation, reduced from 4 to 2 months of basic pay. Many military dentists have, by their 15th year of service, obtained a dental

specialty. Hence, on a comparative scale, their pay lags far behind those of civilian specialists and the previously mentioned reduction in the Continuation Pay rate for nonspecialists tends to reduce these individuals' pay levels to those of dentists in civilian general practice.

The general conclusion that can be drawn from Figures 4 and 5 is that for the majority of their careers, military dentists receive slightly less than their civilian counterparts. If the Special and Continuation Pays were not provided, the approximate mean difference between military dentist' income and the mean civilian earnings for all dentists combined would increase from \$3,800 to \$13,500 annually. This is an increase in the existing income difference of about 350%.

Discussions with representatives from the American Dental Association indicate that there exists, by specific area in the United States, an over-abundance of dentists in some locations, but a scarcity of dentists in others. Taken in the aggregate, however, there does not appear to be significant evidence of a trend towards an excess in the number of dentists. Hence, employment opportunities for dentists in the civilian community should remain for the foreseeable future. This fact, taken in conjunction with any major increase in the difference between civilian and military dentists pay levels could have a negative impact on the recruitment and retention of military dentists.

VI. FINDINGS.

A. Manning levels for dentists are good. This indicates that there is no need for compensation above the current levels.

B. Earning levels for military dentists lag behind those of their civilian counterparts for the greater part of their military careers.

C. The Special and Continuation Pays for Dentists should be maintained in their present forms.

VII. RECOMMENDATION. Maintain the Special and Continuation Pays for Dentists in their present forms.

References

1. Senate Report No. 608, p.4, accompanying S.1661, 80th Congress, 1st Session.
2. Career Compensation for the Uniformed Services, A Report and Recommendation for the Secretary of Defense by the Advisory Commission on Service Pay, December, 1948, p.29.
3. House Report No. 1806, pp. 2, 4, and 6, accompanying H.R. 9428, 84th Congress, 1st Session.
4. Senate Report No. 808, pp. 10-11, accompanying H.R. 13510, 90th Congress, 1st Session.
5. American Dental Association, 1982 Survey of Dental Practice.

LEGISLATIVE HISTORY OF SPECIAL PAY
AND CONTINUATION PAY FOR DENTISTS

1. Army - Navy - Public Health Service Officer Procurement Act of 1947 (Pub. L. No. 61-365, 61 Stat. 776) authorized a \$100 Special Monthly Pay for Regular Officers who were then commissioned in the medical or Dental Corps and for those who were so commissioned before Sept 1, 1952.
2. The Act of 9 September 1950 (Pub. L. No. 81-779, 64 Stat. 826) established the requirement for male Health Professionals under age 50 in the categories of Medicine, Dentistry, Osteopathy, Veterinary Medicine and Optometry to register under the Selective Service Act and made them subject to selected induction calls. It also extended the \$100 entitlement to Reserve Medical and Dental officers.
3. The Act of 25 June 1952 (Pub. L. No. 82-410, 66 Stat. 156) extended the special pay cut-off from 1 September 1952 to 1 July 1953.
4. The Act of 29 June 1953 (Pub. L. No. 83-84, 67 Stat. 86) extended the special pay cut-off from 1 July 1953 to 1 July 1955. It also made Veterinary Officers eligible for the Special Pay of \$100.
5. The Act of 30 June 1955 (Pub. L. No. 84-118, 69 Stat. 223) extended the Special Pay cut-off from 1 July 1955 to 1 July 1959.
6. The Act of 30 June 1955 (Pub. L. No. 84-497, 70 Stat. 119) continued Special Pay for Veterinarians at the monthly rate of \$100 but changed the amount for physicians and dentists to a graduated scale based on length of active service. In addition, medical and dental Officers were awarded 4 years of constructive credit for pay and promotion purposes.
7. The Act of 23 March 1959, (Pub. L. No. 86-4, 73 Stat. 13) extended the special pay cut-off from 1 July 1959 to 1 July 1963.
8. The Act of 2 April 1963 (Pub. L. No. 88-2, Stat. 4) extended the Special Pay cut-off from 1 July 1963 to 1 July 1967.
9. The Uniformed Services Pay Act of 1963 (Pub. L. No. 88-132, 77 Stat. 210) raised the monthly rate of Special Pay for Dentists.
10. The Act of 30 June 1967 (Pub. L. No. 90-40, 81 Stat. 100) extended the Special Pay cut-off from 1 July 1967 to 1 July 1971.
11. The Act of 16 December 1967 (Pub. L. No. 90-207, 81 Stat. 649) instituted a Continuation Pay of up to four months additional basic pay for physicians and dentists.
12. The Act of 18 October 1968 (Pub. L. No. 90-603, 82 Stat. 1187) made minor modifications to the Continuation Pay law, thereby insuring eligibility at the completion of an individual's initial obligation.

13. The Act of 28 September 1971 (Pub. L. No. 92-129, 85 Stat. 348) extended the Special Pay cut-off from 1 July 1971 to 1 July 1973. It also made optometrists eligible for the Special Pay of \$100.00 per month.
14. The Act of 19 July 1973 (Pub. L. No. 93-64, 87 Stat. 147) extended the Special Pay cut-off from 1 July 1973 to 1 July 1975.
15. The Act of 6 May 1974 (Pub. L. No. 93-273, 88 Stat. 94) extended the Special Pay cut-off from 1 July 1975 to 1 July 1977 for physicians and dentists but not for veterinarians and optometrists. It also terminated Continuation Pay for physicians and instituted Variable Incentive Pay for physicians.
16. The Act of 30 September 1977 (Pub. L. No. 95-114, 91 Stat. 1046-1047) extended the cut-off date for physicians and dentists from July 1977 to 30 September 1978. It also reinstituted the Special Pay of \$100 per month for optometrists and veterinarians.
17. The Department of Defense Appropriation Authorization Act of 1979 (Pub. L. No. 95-485, 92 Stat. 1619) extended the pay from 30 September 1978 to 30 September 1980.
18. The Uniformed Services Health Professionals Special Pay Act of 1980 (Pub. L. No. 96-284, 94 Stat. 587 et seq) made permanent the Special Pay of \$100 per month for veterinarians, optometrists and dentists. It also froze the rates at which dentists could receive Continuation Pay to those which existed on 1 October 1979.

SUMMARY OF RESPONSES

Special and Continuation Pay for Dentists

Issues:

1. There is no need for additional compensation above the current levels provided.
2. The Special Pay and Continuation Pay for Dentists should be maintained in its present form.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Concurs.
Coast Guard	Defers to judgment of the QPMC Staff
PHS	Concurs.
NOAA	Defers to using Services.
JCS	Concurs.

37 U.S.C. 304
SPECIAL PAY: DIVING DUTY

DIVING DUTY PAY

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Diving Duty Pay

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DIVING DUTY PAY

I. PURPOSE. To increase the ability of the Uniformed Services to attract and retain sufficient volunteers to perform the arduous and hazardous duties involved with diving.

II. DATA SOURCES. The primary source of information used in this analysis was data received from the Navy, Army, Marine Corps, Air Force, Coast Guard and NOAA. A thorough review was made of various Department of Defense documents and prior compensation studies including the Hook Commission (1948), the Strauss Commission (1952-53), the Gorham Report/Randall Panel (1962), and Staff Research Papers of the Third QRMC (1975-76). Other sources of information include a 1982 study by General Research Corporation, the U.S. Office of Personnel Management, the U.S. Maritime Commission, Taylor Diving and Salvage Corporation, and the Association of Diving Contractors. Field interviews were conducted with Navy and Coast Guard divers at Naval Amphibious Bases, Little Creek, VA. and Coronado, CA. (including SEAL, EOD, and Fleet diving personnel) and at the Coast Guard Atlantic Strike Team Headquarters, Elizabeth City, N.C.

III. HISTORICAL PERSPECTIVE. The history of diving pay within the U.S. Uniformed Services encompasses almost a century. During this period the pay has taken on numerous forms. From 1886 to 1922, divers received this special pay under Navy Regulations (Gen. Order No. 346 of 20 April 1886) at the rate of \$1.20 per hour during those periods when actually engaged in diving. The pay was recognized under law by the Joint Service Pay Act of 1922 (Public Law 67-235).

Several submarine disasters during the mid 1920's highlighted the lack of trained and qualified Navy divers and led to the establishment, in 1926, of the Navy Deep Sea Diving School and the Experimental Diving Unit, as well as the revision of diving pay rates in 1928. The Act of 9 April 1928 (Public Law 70-244) authorized the payment of diving pay to enlisted members at a rate of not less than \$5.00 nor more than \$30.00 per month, as may be prescribed by the Secretary of the Navy. Furthermore, the act authorized the payment of an additional \$5.00 per hour for divers performing salvage operations in water over 90 feet in depth. Officers first received special pay for diving duties under the Act of 16 January 1936 (Public Law 74-415) which authorized 25% of base and longevity pay for those officers serving at submarine escape tanks, the Navy Deep Sea Diving School, and the Naval Experimental Diving Unit. Enlisted personnel assigned to these facilities continued to receive diving pay at the rates stipulated in the 1928 legislation. Responsive to the enormous salvage task at hand following the attack on Pearl Harbor (where the depth of water is generally less than 50 feet), the Act of 27 June 1942 broadened the provisions of the 1928 legislation by allowing the payment, to both officer and enlisted personnel, of \$5.00/hr for salvage or repair work in waters of less than 90 feet whenever extraordinarily hazardous conditions existed.

The Career Compensation Act of 1949 (Public Law 81-351) restructured the legislation authorizing diving pay, separating the authority into two sections. Under the first section, entitled "Special Pay-Diving Duty", the rate of not less than \$5.00 nor more than \$30.00 per month for enlisted personnel was continued. Also kept was a \$5.00 per hour rate for both officer and enlisted personnel engaging in salvage or repair diving in waters exceeding 90 feet, or at depths less than 90 feet under extraordinarily hazardous conditions. Personnel serving at a submarine escape training tank, the Deep Sea Diving School, or the Navy Experimental Diving Unit were authorized special payment under the section entitled "Incentive Pay - Hazardous Duty" at the rate of \$100.00 per month for officers and \$50.00 per month for enlisted.

The Career Incentive Act of 1955 (Public Law 84-20) increased by 10% the rates of diving pay prescribed in both sections. Following the recommendation of the Strauss Commission (1953), a new category under the "Incentive Pay - Diving Duty" section was also added to include deep-sea diving involving the use of helium-oxygen as a breathing mixture.

The Act of August 17, 1961 (Public Law 87-145) consolidated the various diving duty pay statutes, combining them under one heading entitled "Special Pay for Diving Duty". A uniform monthly rate was set at \$110.00 for officers and between \$55.00 and \$100.00 for enlisted personnel. Shortly thereafter, the Act of 7 September 1962 (Public Law 87-649) amended the maximum enlisted rate to \$110.00 per month. Enlisted divers were paid on a sliding scale from \$55/mo to \$110/mo, depending on their level of diving qualification. Also included was a provision that restricted personnel drawing diving pay from receiving an additional incentive pay for hazardous duty. These rates remained in effect for almost twenty years.

The Uniformed Services Pay Act of 1981 (Public Law 97-60) substantially changed the rates of diving duty pay. Maximum rates were set at \$300.00 per month for enlisted personnel and \$200.00 per month for officer personnel. In addition, the act authorized diving pay recipients to also receive one other hazardous duty incentive pay under the provisions of 37 U.S.C. 301.

Throughout the evolution of diving duty pay rates, the intent was clearly to provide an incentive to attract and retain sufficient numbers of individuals to this arduous, physically demanding, hazardous, and often unpleasant field of duty. In discussing the justification for extra pay, the 1953 Strauss Commission referred to diving duty as "extremely arduous and dangerous" and went on to state, "The field of deep sea diving is one where men work in a strange medium, often under unpleasant conditions, constantly subject to decompression sickness (bends) or a more serious accident. The special pays offer an incentive so that the service can obtain the needed divers."¹

The House of Representatives report accompanying the Act of August 17, 1961 stated:

The Committee on Armed Services is convinced that the Navy must have sufficient divers to meet its military requirements. In addition to rescues, their ability to perform work on the underwater bodies, propellers, and other submerged equipment of waterborne ships saves the Navy substantial sums of money by reducing the requirements for expensive and time-consuming drydocking. Navy divers, for example, salvaged ships and cargo during World War II valued at over \$2 billion. Thus the proposed legislation will contribute a sound, overall incentive to the maintenance of this capability.²

The Senate report accompanying the Pay Act of 1981 justified the increase in diving pay stating:

The existing maximum diving pay of \$110 was established in 1961 and has lost its incentive value. In 1961, diving pay amounted to 42-47 percent of base pay, depending upon the classification and grade of the enlisted diver. Today it amounts to less than 15 percent of base pay.³

IV. METHODOLOGY. The first section of this analysis will address the total diving population and investigate the composition and purpose of those groups of individuals in each service comprising the total population of Diving Duty Pay recipients. It will outline the general nature of the duties performed by each group as they relate to diving, the degree and length of participation in diving duties by group members, and the working conditions and hazards which are normally encountered by the divers. Sections two and three form the primary substance of the analysis. Section two will focus on the suitability of the pay. For example, is Diving Pay fulfilling its stated purpose of meeting service requirements for divers? The third section evaluates the Diving Duty Pay rates to determine if they are consistent with the purpose of the pay.

V. ANALYSIS.

A. SECTION ONE.

1. General. Table 1 depicts the number of DoD Diving Pay recipients from 1973-1982. The large increase in recipients from 1981 to 1982 is due to the provision of the 1981 Pay Act which authorized diving duty pay recipients to receive one additional hazardous duty incentive pay under 37 U.S.C 301 in addition to diving pay. Prior to this act, diving pay recipients could receive no other incentive pays. Thus, before 1981, personnel eligible to receive both diving pay and a hazardous duty incentive pay under 37 U.S.C 301 at a rate higher than diving pay could elect the higher hazardous duty incentive pay and forfeit diving pay. Those personnel entitled to two hazardous duty incentive pays in

addition to Diving Pay, could also opt to receive the two incentive pays in lieu of Diving Pay alone. Therefore, the increase in the numbers of personnel receiving diving pay in FY82 is partly due to a migration of personnel to Diving Pay from other Hazardous Duty Incentive Pays.

Table 1

DoD Diving Pay Recipients					
<u>Year</u>	<u>Number</u>	<u>Year</u>	<u>Number</u>	<u>Year</u>	<u>Number</u>
1973	3773	1977	2683	1981	2373
1974	3632	1978	2322	1982	3546
1975	3863	1979	2248		
1976	3361	1980	2225		

Table 2 shows the number of Diving Pay recipients by service for fiscal year 1982. The predominance (74%) of diving pay recipients are Navy.

Table 2

FY82 Diving Duty Pay
Recipients by Service

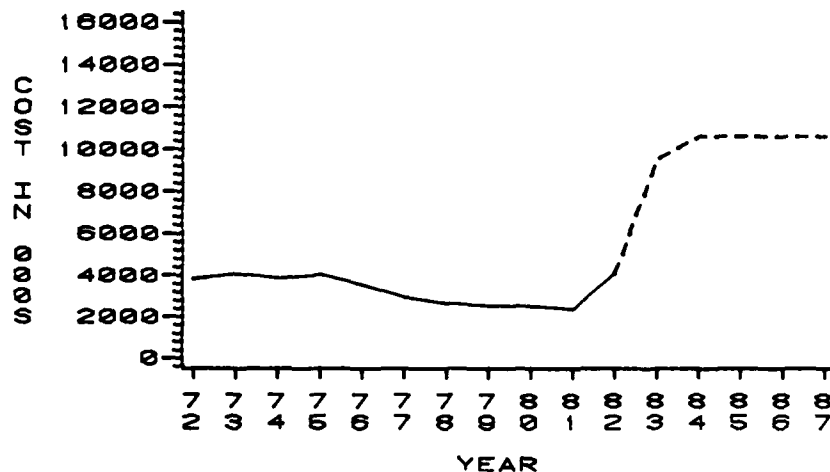
<u>Service</u>	<u>Officer</u>	<u>Enlisted</u>	<u>TOTAL</u>
ARMY	28	177	205
NAVY	614	2108	2722
MARINE CORPS	41	214	255
AIR FORCE	7	357	364
COAST GUARD	12	46	58
NOAA	60	-	60
TOTAL	762	2902	3664

2. Cost. The cost of Diving Duty Pay increased from \$2,347K in FY81 to \$4,090K in FY82. The increase resulted from the 1981 Pay Act which authorized both higher Diving Pay rates and increased numbers of personnel entitled to Diving Pay. The higher costs reflect the payment of higher rates and additional entitlements for only the final quarter of FY82.

The total financial impact of the 1981 Pay Act will be realized in FY83 when costs are projected to rise to approximately \$9,557K. Projected cost increases from FY83 to FY84 are due to growth in the Navy diving program. Current projections show Diving Duty Pay costs stabilizing at approximately \$10,126K for FY85 to FY87. The annual cost of diving pay and cost projections for fiscal years 1983 through 1987 are shown in Figure 1.

Figure 1
Cost of Diving Duty Pay

COST OF DIVING DUTY PAY FY72-FY87



3. Composition of Service Programs.

a. Army. There are two groups of individuals within the Army who receive Diving Pay, marine divers (about 25%) and the combat swimmers (about 75%). Fiscal year 1982 requirements were for 4 officer and 46 enlisted marine divers. Generally, officers will serve only one tour of duty in the diving field, while enlisted personnel can remain in the skill through pay grade E-7. Marine divers are basically "hardhat", or surface air supplied divers, and perform missions in underwater reconnaissance, salvage, repair or demolition. Combat swimmers only recently (1 July 1982) became entitled to Diving Duty Pay. Current requirements for combat swimmers include 23 officers (pay grades O-2 and O-3) and 133 enlisted personnel (pay grades E-5 through E-8). Combat swimmers are assigned mainly in Special Forces units. These swimmers basically perform horizontal diving missions including infiltration, search and recovery, target attack, and reconnaissance operations. Officers will probably serve only one tour of duty as a combat swimmer while enlisted personnel may serve repeated tours as a combat swimmer through pay grade E-8.

b. Marine Corps. The Marine Corps diving program has a current requirement for approximately 56 officer and 344 enlisted divers. Marine Corps divers are trained only in SCUBA and are attached to both force reconnaissance and division reconnaissance units. Because the Marine Corps does not consider diving a primary MOS, repeat assignments to billets requiring SCUBA qualifications are rare.

c. Air Force. Approximately 6 officers and 395 enlisted Air Force personnel perform diving duty. The majority of these persons (about 70%) are pararescuemen who are trained to provide rescue and recovery operations, emergency medical treatment, and survival support to downed aviators. Diving and parachuting are only two of the many skills possessed by members of this group. Pararescuemen remain in the field throughout a career, maintaining qualifications in all skill areas including SCUBA diving. The second group of Air Force divers (about 20%), are diving qualified Combat Control Team (CCT) members. The mission of CCTs is to establish assault zones in austere and nonpermissive environments including the placement of navigational aids, control of air traffic, provision of command/control communications and removal of obstacles and unexploded ordnance with demolitions. Employment methods include parachuting and SCUBA. Not all CCT members are SCUBA qualified. CCT divers can be expected to serve two four-year tours in a diving position during a career. A limited number of basic SCUBA divers make up the remainder of the Air Force diver requirement and serve random tours in diving assignments.

d. Coast Guard. The Coast Guard has requirements for approximately 12 officer and 46 enlisted divers, both SCUBA and hardhat. Coast Guard divers are assigned aboard icebreakers, several buoy tenders, and with the National Strike Force. Diving within the Coast Guard is not a career field and only about 15% receive a repeat tour in a diving assignment.

e. NOAA. The purpose of the NOAA Diving Program (NDP) is to support the NOAA scientist. Divers perform duties in support of scientific research, fisheries, and survey and oceanographic tasks. While the total NDP includes nearly 300 divers, only about 25% are uniformed personnel. Sixty NOAA officers received diving pay in FY 1982. Diving duty for NOAA officers is generally performed on a collateral duty basis involving operations diving and in some cases, diving supervisory duties for ships or shore-based units. NOAA officers with diving qualifications may spend an average of 7 years in a billet requiring diving skill in the course of a career. SCUBA is the primary diving method utilized by NOAA divers; however, special operations sometimes require the use of surface-supplied or mixed gas methods.

f. Navy. The Navy has by far the largest population of divers of any of the Uniformed Services which is divided into four broad categories performing diving duty, each with a different purpose. All Navy diving programs are career except the SCUBA category. Enlisted divers in the other three categories (UDT/SEAL, EOD, Fleet) can expect to spend 19 of 20 years in diving billets. Officer divers will generally spend between 15 and 16 years assigned to diving duty. SCUBA divers will normally be assigned to only one or two tours of diving duty throughout a career. For each group, diving provides only the means for getting to the work site. A brief description of each category follows:

- Underwater Demolition and Sea Air Land team members

(UDT/SEAL). These are career special warfare personnel similar to the combat swimmer. They use advanced SCUBA systems including closed-circuit, mixed gas SCUBA; closed circuit, oxygen SCUBA; and semi-closed circuit, mixed gas SCUBA. Other skills required of these personnel include the use of demolitions and parachuting. This This category of diver comprises approximately 30 percent of Navy divers.

- Explosive Ordnance Disposal (EOD). These divers utilize SCUBA or surface-supported diving systems to detect, identify, and dispose of ordnance located underwater. A portion of these personnel are required to perform parachuting duty in addition to demolition and diving duties. EOD personnel make up approximately 14 percent of the Navy diver population.
- Fleet Divers. Fleet divers are the largest Navy diving category comprising about 44 percent of all divers. These divers primarily use surface-supported diving systems to perform underwater maintenance and salvage work. They can advance through various levels of diving duties and responsibility depending upon their training, experience, and qualifications. A brief description of each level follows.
 - Second Class Diver. This is the entry level step of the Fleet Diver program. These personnel have received training in the use of air systems to a depth of 190 feet.
 - First Class Diver. These divers have been trained to use mixed gas breathing systems to a maximum of 300 feet and have a minimum of one year experience as a second class diver.
 - Saturation Diver. These personnel have been trained to use sophisticated mixed-gas diving systems to great depths and to remain there for extended periods of time. Saturation diving training is available only to personnel who have a minimum of one year experience as a first class diver.
 - Master Diver. These divers have extensive experience as a diver first class or saturation diver. Master divers must be in pay grade E-7 or above and have received additional training in the supervision and management of Navy diving operations. Master divers provide the diving experience, knowledge and supervision necessary for Navy diving operations.

SCUBA Divers. SCUBA divers are trained to use open-circuit, compressed air SCUBA systems only. This is the most basic level of diving qualification. While all Navy divers receive SCUBA training, SCUBA divers do not go past this level nor receive training in advanced diving systems as do Navy divers in the career diving fields. Basic SCUBA divers utilize their SCUBA training as a secondary skill and not as a primary occupation. The bulk of Navy SCUBA divers are assigned to submarines and training facilities. SCUBA divers assigned to submarines conduct underwater hull searches and inspections of their submarines. SCUBA divers are non-career divers and will most likely serve only one tour utilizing their secondary SCUBA skills. Approximately 12 percent of Navy divers are SCUBA divers.

4. Hazards Associated with Diving. While not classified as an "Incentive Pay: Hazardous Duty" under Title 37, the hazards associated with diving, particularly with advanced diving systems, are considerable. Divers work in a hostile, unnatural human environment totally dependent upon the continued satisfactory functioning of their life support systems. Divers are susceptible to medical disorders, equipment malfunctions and external marine hazards, as well as the hazards related to their warfare mission. Their working environment is normally darkness, extreme cold, and isolated. Among the numerous medical disorders frequently encountered by divers are barotrauma (squeeze), decompression sickness (bends), air embolism, hypoxia, hypothermia, nitrogen narcosis, carbon dioxide, carbon monoxide and oxygen poisoning, aseptic bone necrosis, subcutaneous emphysema, mediastinal emphysema and pneumothorax. Divers may also be endangered by a multitude of equipment malfunctions including the improper operation of breathing apparatus, diving suits, and air supply, or tangled or fouled tending lines or air hoses. External marine hazards are underwater tools, ship's propellers, suction and intakes, toxic chemicals, and dangerous marine life.

Further, the combat missions for which special warfare divers (SEAL/UDT/EOD) train provide an even greater gamut of potential hazards. As the bulk of combat missions are of a clandestine nature, training must be conducted during darkness, poor weather conditions, i.e., high winds and seas, and without normal safety provisions. Divers must also swim long distances in swift or changing currents to avoid detection of the offshore launch platform or undergo the hazards inherent in the launch and recovery of swimmer delivery vehicles (SDV). EOD technicians must act rapidly, and with complete concentration to disarm old or foreign made munitions, severely detracting from their concentration on diving.

5. Injury/Accident Data. Table 3 depicts aggregate diving accident data for the Uniformed Services for each Fiscal Year, 1978 to 1982. Non-fatal injuries cover a wide range of mishaps but were all of a nature serious enough to have been reported to Service safety centers and generally required medical aid or recompression. The large majority of casualties were reported by the Navy, as would be expected, given the large population of Navy divers.

Table 3
Diving Casualty Data - All Services
(FY78 - FY82)

<u>FY</u>	<u>NON-FATAL INJURIES</u>	<u>FATALITIES</u>
78	89	2
79	106	0
80	106	2
81	122	1
82	157	5
TOTAL	582	10

Computation of per capita casualty rates for individual Services is not possible, because of the small numbers of diving personnel and reported diver injuries in most Services. However, the casualty rate for Navy divers showing the number of casualties per 1000 dives is shown in Table 4. Utilizing an average active Navy diver population of 3000, it can be shown that Navy divers averaged over 36 dives during FY82; and that the chances of a diver being involved in an accident were greater than 1 out of 20. These statistics clearly indicate that there are risks involved, even within the ranks of the professional, highly trained, and rigidly safety conscious military diving community.

Table 4
Navy Diving Casualty Rates By Fiscal Year

<u>FY</u>	<u>CASUALTIES PER 1000 DIVES</u>
78	1.22
79	1.42
80	1.28
81	1.28
82	1.47

B. SECTION TWO.

1. Manning. This section will focus on whether Diving Duty Pay is fulfilling its stated purpose of meeting service requirements. Historical manning levels of service diving programs are depicted in Table 5. Current and future authorization/billet projections are in Table 6.

Several services are currently at or near 100% manning levels (Army, Coast Guard, NOAA). Services showing less than optimum manning levels are the Marine Corps, Air Force and Navy and will be considered next.

While the Marine Corps currently shows the lowest manning level, it can be seen from Table 5 that a low manning level has existed over the past five fiscal years with a slow but steadily increasing fill rate. As outlined previously, the Marine Corps diving program is not a career program and those serving in force reconnaissance positions will most likely serve only one tour as a SCUBA diver. Thus, a retention problem cannot be determined to exist. The Marine Corps states that attraction to diving duty is also not a large problem, but that low manning levels are caused by other factors. First, units not deployed, or slated for deployment are normally manned at between 85% and 90%. Diver manning in these units is correspondingly diminished. Also, because of external operational taskings and mandatory training requirements the availability of marines to attend diver training does not coincide with school quota availability. Current attrition from diving assignments is negligible and the number of authorizations is projected to remain constant.

The majority of Air Force divers are members of Combat Control Teams (CCTs) or pararescuemen, to whom SCUBA diving skills play only a collateral role in meeting their primary mission. Until July 1982, members of these groups did not elect to receive Diving Duty Pay. Air Force diver manning shortfalls are in these two career fields. The addition of diving pay at the \$100.00/month rate for a CCT member previously drawing only Parachute Pay, and the substitution of Diving Pay at the 150.00/month rate for Parachute Pay at the \$83.00/month rate for pararescuemen, provides additional financial incentive for personnel to enter and remain in these career fields. The relatively small size of these diver groups (approximately 55 CCT and 250 pararescuemen) coupled with the secondary relationship of diving to their primary mission, makes an in-depth analysis of these segments of the diving population non-productive. Retention within the pararescue career field is good, although second term rates have only recently approached the overall Air Force level. Recent reenlistment rates for pararescuemen are compared with overall Air Force rates in Table 7.⁴ Future diving authorizations for the Air Force will remain constant at approximately 425.

Table 5
Historical Manning Levels of Service Diving Programs
Authorized vs. Assigned

<u>SERVICE</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
ARMY	78% (60/47)	70% (56/39)	80% (51/41)	98% (50/49)	99% (206/205)
NAVY 1/	82% (2391/1950)	78% (2453/1918)	82% (2383/1956)	79% (2543/2005)	81% (2568/2080)
MARINE CORPS	50% (400/202)	47% (400/188)	46% (400/182)	59% (400/237)	64% (400/255)
AIR FORCE 2/	-----85% to 92%-----				91% (401/364)
COAST GUARD 3/	Not Avail	Not Avail	Not Avail	100% (58/58)	100% (58/58)
NOAA 4/	100% (82/82)	100% (78/78)	100% (53/53)	100% (65/65)	100% (60/60)

NOTES:

- 1/ Navy manning levels reflect career enlisted diving program data. Historical officer data unavailable.
- 2/ Reflects pararescue manning levels only prior to FY82.
- 3/ Manning less than 100% but exact level for FY78 - FY80 unavailable.
- 4/ A precise manning level cannot be computed for NOAA because authorizations fluctuate on a situational basis. NOAA Corps divers are "authorized" to dive in any given assignment based upon their qualification to do so and the requirements of the unit to which assigned. In addition, civilian NOAA divers account for 70% of NOAA's diving capability.

The Navy currently shows a diver manning level of 81 percent. Given the large size of their diving community, this low level of manning represents a significant shortfall in actual divers. This condition is chronic (Table 5), and coupled with a projected increase in diver authorizations, the Navy has the most difficult manning position of any service.

Because Navy divers comprise the major population of career divers, have been historically undermanned, and because of the increased projected demand for divers, the remainder of the analysis will concentrate on this population.

Table 6
Diving Duty Authorizations
(FY82 - FY87)

<u>SERVICE</u>	<u>ACTUAL</u>		<u>PROJECTED</u>			
	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>
ARMY	206	253	249	245	245	245
NAVY	3771	3738	4129	4143	4157	4160
USMC	400	400	400	400	400	400
USAF	401	425	425	425	425	425
USCG	58	63	63	63	63	63
NOAA*	60	65	65	65	65	65

*Estimate only. Actual "authorizations" for NOAA divers vary from year to year on a situational basis.

Table 7
Air Force Pararescue Reenlistment Data

<u>FY</u>	<u>First Term</u>		<u>Second Term</u>		<u>Career Term</u>	
	<u>Pararescue</u>	<u>A.F.</u>	<u>Pararescue</u>	<u>A.F.</u>	<u>Pararescue</u>	<u>A.F.</u>
80	58.8	35.8	43.8	62.7	86.6	91.6
81	60.5	42.9	57.1	71.5	96.8	94.4
82	65.7	56.9	76.5	80.8	100.0	95.2
83*	64.7	68.2	83.3	85.5	100.0	96.2

* Includes data through February 83 only.

Current and historical manning levels for Navy divers by major career category (excludes SCUBA), are shown in Table 8. These figures indicate

that current shortages lie primarily in the EOD and Fleet diver categories. However, UDT/SEAL manning levels are expected to drop significantly with increased authorizations for new SEAL units in FY 84. Since Fleet divers are comprised of four skill classifications, the respective skill manning levels for Fleet divers are shown in Table 9. Shortages in all classifications of Fleet divers occur repeatedly with second class divers showing the greatest shortfalls. Second class diver is the entry level for all fleet divers and shortfalls of second class divers will ultimately result in greater shortfalls further up the diving skill ladder.

Table 8
Navy Enlisted Career Diver Manning
Authorized vs. Assigned
FY 1978 - FY 1982

<u>CATEGORY</u>	<u>FY 1978</u>	<u>FY 1979</u>	<u>FY 1980</u>	<u>FY 1981</u>	<u>FY 1982</u>
UDT/SEAL	87.4% (666/582)	79.9% (735/587)	94% (701/659)	93.7% (791/741)	98.9% (792/783)
EOD	87.5% (377/330)	77.2% (391/302)	68.3% (397/271)	69.1% (400/276)	79% (399/315)
FLEET	77.5% (1348/1045)	77.5% (1327/1029)	79.4% (1285/1020)	73.1% (1352/988)	71.3% (1377/982)

Table 9
Enlisted Career Fleet Diver Manning
Authorized vs. Assigned
FY 1978 - FY 1982

<u>DIVING CLASSIFICATION</u>	<u>FY 1978</u>	<u>FY 1979</u>	<u>FY 1980</u>	<u>FY 1981</u>	<u>FY 1982</u>
Second Class	441/347 (78.7%)	446/331 (74.2%)	418/403 (96.4%)	451/331 (73.4%)	445/305 (68.5%)
First Class	601/487 (81.0%)	573/495 (86.4%)	564/421 (74.6%)	594/438 (73.7%)	600/442 (73.7%)
Saturation	200/143 (71.5%)	200/131 (65.5%)	196/123 (62.7%)	197/141 (71.6%)	219/156 (71.2%)
Master	107/69 (64.5%)	109/73 (67.0%)	100/74 (68.5%)	110/78 (70.1%)	114/80 (70.2%)

In summary, the most serious diver shortfalls are found in the EOD program and the Fleet diver program. Increased authorizations expected in the UDT/SEAL program for FY 84 may also create manning shortfalls in this category of diver, until sufficient numbers of new divers can be attracted to the program. Within the Fleet diver program, shortages of saturation divers and second class divers are the most serious. Master diver manning levels have only recently begun to improve.

2. Attraction. Assignment to diving duty is accomplished totally on a volunteer basis. Thus, to obtain the required numbers of personnel, diving programs must compete for these volunteers with both outside organizations, and with other service programs. Table 10 shows the actual input of enlisted personnel to entry level diving programs as a percentage of the planned input.

Table 10
Input to Entry Level Diver Programs as
a Percent of Planned Input

<u>PROGRAM</u>	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>
UDT/SEAL	87.7% (351/400)	66.7% (267/400)	67.2% (168/250)	84.7% (211/250)
EOD	46.6% (42/90)	50.8% (89/175)	95.0%* (190/200)	74.8% (131/175)
SECOND CLASS DIVER	75.4% (264/350)	54.0% (162/300)	55.0% (220/400)	63.7% (255/400)

* High input reflects trial program which sent personnel directly to EOD training upon completion of basic training. Program discontinued because of high in-training attrition rates for these personnel.

A sufficient supply of personnel at the entry level is essential to the maintainance of the diving force. Limited supplies of new divers will require compensatory increases in diver retention to maintain the diving force. The data exhibited in Table 10 indicates that Navy diving programs are not attracting the required number of new entrants.

Average Navy attrition rates for entry level training are shown in Table 11. As can be seen, a significant number of students will drop out before completion. The Marine Corps and Army also report substantial training attrition for applicable training courses.

Table 11
Training Data

PROGRAM	AVG ATTRITION	COURSE LENGTH	NOTES
UDT/SEAL	55%	6 Months	Officer & Enlisted
EOD (enl)	60%	11 Months	
EOD (off)	7%	10 Months	Have previously been trained as basic diving officers prior to EOD training
Basic Diving Officer	17%	4 Months	
Second Class Diver	35%	4 Months	Enlisted Only
Scuba	35%	4 Weeks	

3. Training Costs. The Navy and Army provide most of the diver training for the Services. The Army provides training for combat swimmers only. NOAA provides training for its own divers. Air Force and Marine Corps divers train at Army or Navy facilities. The Coast Guard utilizes Navy training facilities. An average training cost of about \$34,000 is incurred to train a master diver (exclusive of saturation training). Training costs for other categories of divers range from \$3,300 for a basic Navy SCUBA diver to \$30,200 for a Navy EOD diver whose training includes instruction in both diving and the use of demolitions. Training costs reported by the Navy are shown in Table 12.

Table 12
Navy Training Costs (Current)

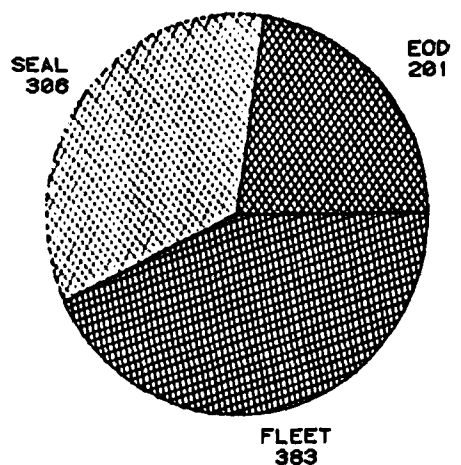
Training	Cost	Cumulative Cost
Fleet Divers:		
Second Class	\$10,900	\$10,900
First Class	15,700	26,600
Saturation	16,600	43,200
Master	8,600	51,800

Table 12 shows that the training costs for divers are not insignificant. Further, it can be seen that the training costs are cumulative for Fleet divers and that losses of Fleet divers at the more advanced skill levels will mean a greater loss of training dollars in addition to the greater loss in experience.

4. Retention. Figure 2 shows the total number of qualified Navy Officer Divers by category. The special warfare community is comprised of Navy Sea-Air-Land (SEAL) and Underwater Demolition Team (UDT) officers. The special operations community includes Explosive Ordnance Disposal (EOD) and Fleet Diving Officers. Current continuation rates for these communities are generally high and the Navy is satisfied at the present time with officer diver retention. The Navy is the only service with significant numbers of officer divers.

Figure 2

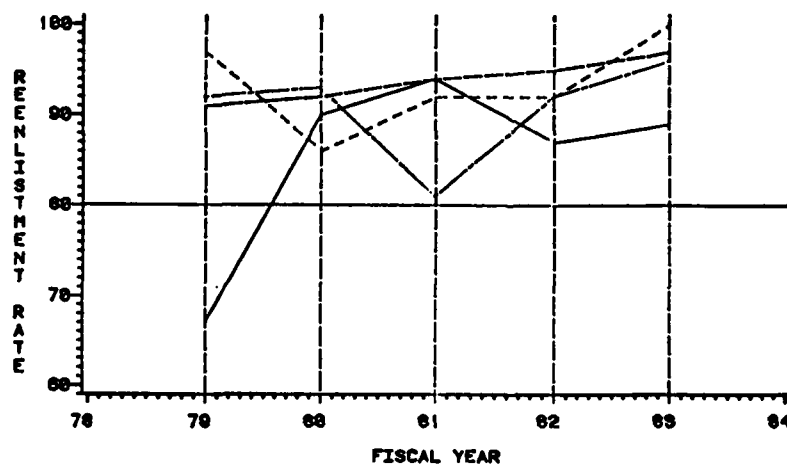
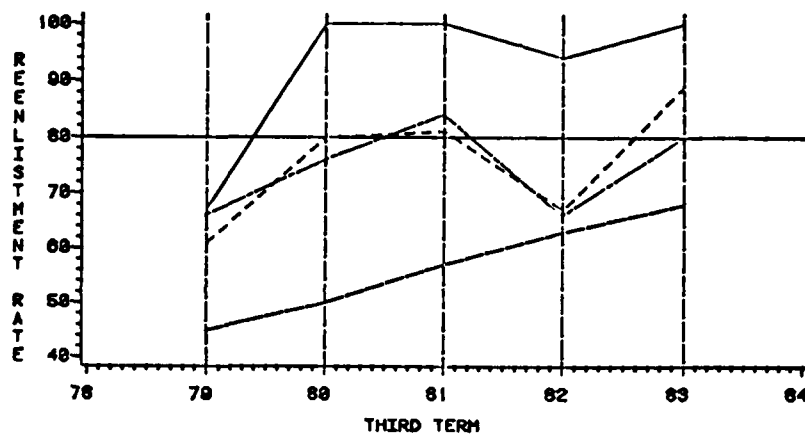
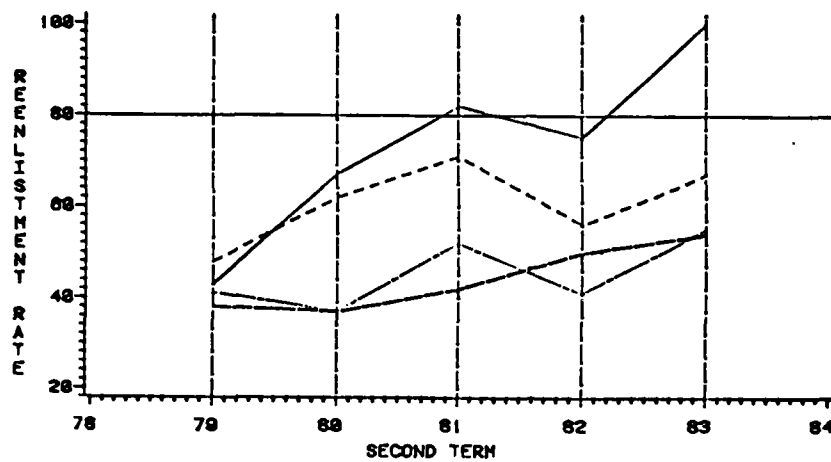
QUALIFIED NAVY OFFICER DIVERS BY CATEGORY AS OF FY 1982



FLEET INCLUDES MEDICAL DIVING OFFICERS

Continuation rates for enlisted diving communities are not available because such a broad spectrum of ratings comprise each community. First, second, and third term reenlistment rates for Fiscal Years 1979 to 1983 are shown in Figure 3. Fiscal Year 1983 data incorporates first quarter rates only, and thus should be considered only a tentative measure of year long rates.

Figure 3
NAVY DIVER REENLISTMENT RATES
FIRST TERM



LEGEND: TYPE — EOD — SEAL
— FLEET — NAVY

FIRST QUARTER FY 83 DATA ONLY
339

Reenlistment rates for all categories of divers generally show an upward trend from FY79 to FY83 (first quarter only). Diver reenlistment rates generally equal or exceed all Navy reenlistment rates.

- a. Fleet Divers. Fleet diver reenlistment rates are substantially lower than rates for other categories of divers at the first term, roughly paralleling the all Navy rate. For second term, fleet diver reenlistments are above the all Navy rate, while at the third term they generally fall at or below the all Navy rate. Low reenlistments in comparison to other groups of divers during the early terms may possibly be attributed to the less glamorous duties of the fleet diver in comparison to SEAL and EOD divers. Although on an upward trend, third term reenlistments for fleet divers have fallen below all Navy rates since FY80 perhaps indicating a strong civilian draw for experienced fleet divers. This trend could pose a long-term threat to the Navy diving capability. Losses at this point will include many of the highly trained and experienced first class, saturation, and master divers whose skills are essential to safe and effective diving operations.
- b. EOD. EOD reenlistment rates are quite high in comparison to all Navy rates. They are substantially higher than those for other categories of divers at all but the third reenlistment point. High retention within the EOD field may be reflective of the older, more mature, career oriented population comprising the EOD field.
- c. SEAL. Seal reenlistment rates generally exceed all Navy rates and are generally higher than or equal to the rates for fleet divers.

In summary, retention of EOD and SEAL divers is good in comparison to overall Navy retention. Fleet diver retention lags behind the EOD and SEAL groups with the lowest retention being exhibited at the first and third reenlistment points.

In addition to normal attrition within the Navy diving programs, a number of personnel in each diving program are attrited involuntarily each year. Reasons for removal from the programs include, but are not limited to, disciplinary action, lack of aptitude, loss of motivation, and unsafe demolition or parachute practices for SEAL/EOD divers. The percent of the total inventory that was involuntarily terminated from each program is displayed in Table 13 by fiscal year. The number of personnel voluntarily requesting termination of diving status each year is insignificant.

Table 13
Percentage of Total Inventory Involuntarily Attrited

CATEGORY	FY 79	FY 80	FY 81	FY 82
UDT/SEAL	6%	6.4%	6.5%	4.9%
EOD	5.6%	3.1%	2.6%	5%
FLEET	13.8%	5%	6.9%	5.2%

C. SECTION THREE. In this third section of the analysis, the financial incentives that are offered to divers will be investigated and comparisons made with other groups of divers.

1. Current Rates. Table 14 displays current rates of Diving Duty Pay by classification of diver. These rates reflect increases authorized by the Uniformed Services Pay Act of 1981 and placed into effect on 1 July, 1982. While a wide range of rates are revealed, a number of factors were considered in the development of the rate structure. Training costs were considered with higher rates generally paid to those categories of divers for whom the greatest training costs had been incurred. (See Table 12). The rate structure also reflects the lowest rates for categories of divers using air breathing systems, higher rates for divers utilizing mixed-gas breathing systems, and the highest rates for diving at great depths under pressure (saturation diving). Rates also reflect consideration of the combat-related nature of diving duties performed. The rates show a spread in diver compensation from \$100 per month to \$300 per month. This is an improvement over rates previously in effect which ranged from \$65 per month to \$110 per month. Diving Duty Pay rates authorized prior to 1 July, 1982 are shown in Table 15.

Table 14
Rates of Diving Duty Pay by Classification *
1 July 1982

Monthly Rate	Classification of Diver
\$300	Master Diver (Army/Navy)
\$275	Saturation Diver (Navy only) Medical deep-sea diving technician- saturation (Navy)
\$200	Diving Officer (Army/Navy/NOAA/CG) Seal/EOD Officer (Navy)
\$175	First Class Diver (Army, Navy, CG) Seal/EOD Enlisted (Navy) Combat Swimmer (Army) Medical special operations technician (Navy)
\$150	Pararescuemen (Air Force) Officer Diver (Air Force/Marine Corps)
\$135	Salvage Diver (Army)
\$125	Officer SCUBA Diver (CG)
\$110	Officer SCUBA Diver (Navy) Enlisted SCUBA Diver (CG) Second Class Diver (CG)
\$100	Combat Control Team (Air Force) (Proposed increase to \$150) Second Class Diver (Army, Navy) SCUBA Diver (Army, Navy, Marine Corps, Air Force)

* Derived from DoD pay manual, Coast Guard Comptroller Manual,
and information furnished by NOAA.

Table 15
Rates of Diving Duty Pay by Classification *
Prior to 1 July, 1982

Monthly Rate	Classification of Diver
\$110	Master Diver (Army, Navy) Saturation Diver (Navy only) Medical Special Operations Technician (Navy) EOD Enlisted (Navy) Officer Diver (Marine Corps, CG, NOAA)
\$100	First Class Diver (Army, Navy, CG) Medical Deep Sea Diving Technician (Navy)
\$ 90	Seal Enlisted (Navy) SCUBA Diver (CG) Second Class Diver (CG)
\$ 80	Salvage Diver (Army)
\$ 65	Second Class Diver (Army, Navy) SCUBA Divers (Army, Navy, Marine Corps, Air Force)

* Derived from DoD pay manual, Coast Guard Comptroller Manual, and information received from NOAA.

A major improvement in the Diving Pay rate structure facilitated by the new maximum diving pay rates, is the ability to provide incentives for divers to move up the diving skill ladder by volunteering for more advanced training within the fleet diving program. Rates of Diving Pay for Fleet divers both before and after 1 July, 1982 are compared below.

Table 16
Comparison of Diving Duty Pay Rates
Before and After 1 July 1982

Diver Classification	Before July 1982	After July 1982
Master Diver	\$110/mo.	\$300/mo.
Saturation Diver	\$110/mo.	\$275/mo.
First Class Diver	\$100/mo.	\$175/mo.
Second Class Diver	\$65/mo.	\$100/mo.

Diving Duty Pay rates before July 1982 provided very little financial incentive for divers to seek advanced training and the increased rigors, risks, hazards, and responsibilities inherent at the higher levels of qualification.

The problem of obtaining sufficient volunteers for advanced training has plagued the Navy for some time and was a primary reason for seeking higher Diving Duty Pay rates in 1981. The Navy was able to attract only about 60% of the volunteers necessary to fill training quotas for First Class Diver training between FY 1979 and FY 1982, and only 78% of Saturation training quotas were filled in FY 1982. Early evidence indicates that the increased rates are still insufficient to provide the required number of volunteers. Thus far in FY 83, volunteers were found to fill only 78% of First Class Diver training quotas and only 8 of 23 seats in the most recent Saturation Diver training class were filled. While the recent increase in diving pay was substantial, and represented the first increase in the rates in almost twenty years, it did not restore Diving Pay rates to the level represented by the 1962 rates.

Table 17 shows diving pay as a percentage of base pay for the years 1949, 1955, 1962, 1980, and 1981. In 1962, Diving Pay represented between 24 and 41 percent of a diver's base pay while, by 1980, Diving Pay had fallen to a level representing only between 6 and 11 percent of this amount. Diving Pay represented between 10 and 21 percent of a diver's base pay after the increases brought about by the Uniformed Services Pay Act of 1981.

Table 17
Diving Pay as a Percentage of Base Pay*

DIVER QUAL.	PAY GRADE	YEARS OF SERVICE	1949 ¹	1955 ²	1962	1980	1981 ³
Second Class	E-4	3	40%	40%	41%	10%	13%
First Class	E-6	10	25%	24%	39%	11%	16%
Saturation	E-7	14	-	-	-	10%	21%
Master	E-9	20	19%	18%	26%	7%	16%
Special Warfare	E-6	10	-	-	35%	10%	16%
Diving Officers	O-3	8	28%	26%	24%	6%	10%

NOTES:

* Rounded

1 Based on maximum rate of \$50/mo enlisted, \$100/mo officer

2 Based on maximum rate of \$55/mo enlisted, \$110/mo officer

3 Base Pay scale effective 1 October 1981

2. Total Compensation. Diving Duty Pay forms a significant portion of the Special and Incentive pay compensation received by divers. However, it may be useful to observe the total financial incentive offered to Navy divers. Proficiency Pay is an additional incentive that has been

provided to divers at various periods in history. Currently, Navy divers receive Proficiency Pay under the Shortage Specialty program at the following rates: Second Class Divers - \$50/mo, First Class divers, EOD, UDT, SEAL - \$75/mo; Saturation and Master Divers \$150/mo. Maximum Selective Reenlistment Bonuses are available to all but SCUBA divers for Zone A (21 months to 6 years) and Zone B (6 to 10 years) reenlistments. Saturation Divers can also receive maximum reenlistment bonuses for Zone C (10-14 years) reenlistments. SCUBA diving does not qualify an individual for a reenlistment bonus. The Uniformed Service Pay Act of 1981 authorized for the first time personnel receiving Diving Pay also to receive one Hazardous Duty Incentive Pay under 37 U.S.C 301a. Thus SEAL and EOD personnel can receive Demolition Pay or Parachute Pay in addition to Diving Pay. SEAL and EOD personnel are qualified for Demolition Pay in addition to Diving Pay. SEAL personnel, and approximately 20 percent of EOD personnel, qualify for Parachute Duty Pay as well. A comparison of Special and Incentive Pays received by selected diver categories is shown below. While the Services pay reenlistment bonuses to divers, Enlistment Bonuses are not paid.

Table 18
Special and Incentive Pays Currently Available
to Selected Enlisted Diver Categories

SIP	SEAL/EOD	DIVER SECOND CLASS	DIVER FIRST CLASS	SATURATION DIVER
DIVING PAY	\$175	\$100	\$175	\$275
HDIP	83	0	0	0
PRO PAY	75	50	75	150
SRB	<u>Zone A,B</u>	<u>Zone A,B</u>	<u>Zone A,B</u>	<u>Zone A,B,C</u>
TOTAL	\$333/mo	\$150/mo	\$250/mo	\$425/mo
	plus	plus	plus	plus
	2 SRBs	2 SRBs	2 SRBs	3 SRBs

These Special and Incentive Pays available to SEAL/EOD and Fleet Diver personnel are displayed over a thirty year career in Figures 4 & 5. The charts assume that the Fleet Diver elects to progress through the entire spectrum of diving skill levels and is able to meet the years-of-service windows required to qualify for the maximum number of SRBs.

Figure 4 shows the Special and Incentive Pay profile for Fleet Divers. The increasing step profile of both Diving Pay and Proficiency Pay is of interest. It is basically the height of these steps, as an individual progresses up the diving skill ladder that provides the financial incentive for the development of advanced skills and for seeking advanced training. While Diving Pay is apportioned in just such a step function, the increase from the Saturation Diver level (shown between years 14 and 20) to the Master Diver level (years 20-30) is minimal. Also, the increases from First Class Diver (years 6-14) to Saturation Diver and from Second to First Class Diver at year 6 appear relatively small in light of the greatly increased hazards and rigors that are experienced at the increased skill levels. The financial draw to saturation diving relies about as heavily on an increase in Proficiency Pay as the increased Diving Duty Pay.

Figure 4 also shows the drop in earnings created by the drop in SRB compensation. This drop occurs well before the 20-year point in a diver's career. Since the period after 20 years of service is where a primary need exists for Master Divers, it would appear that a greater step increase might be appropriate at the Master and Saturation Diver level.

Figure 5 shows that the Special and Incentive pays for SEAL and EOD personnel remain fairly constant throughout a career. The SRBs are appropriately applied in terms of both timeliness and amount. As noted previously, a large portion of these personnel are eligible for a second Hazardous Duty Incentive Pay. Interviews with personnel from these groups, conducted as a part of this study of Diving Pay indicate a strong feeling that individuals qualifying for two HDIPs in addition to Diving Pay should receive all three Special and Incentive Pays. While Figure 5 displays the SRB as being pro-rated over time, divers interviewed perceived the SRB as a single payment at one point in time. Paying all HDIPs for which members of this group qualified would certainly be one method to increase the financial attractiveness of the program.

Figure 4

NAVY ENLISTED FLEET DIVERS SPECIAL AND INCENTIVE PAY

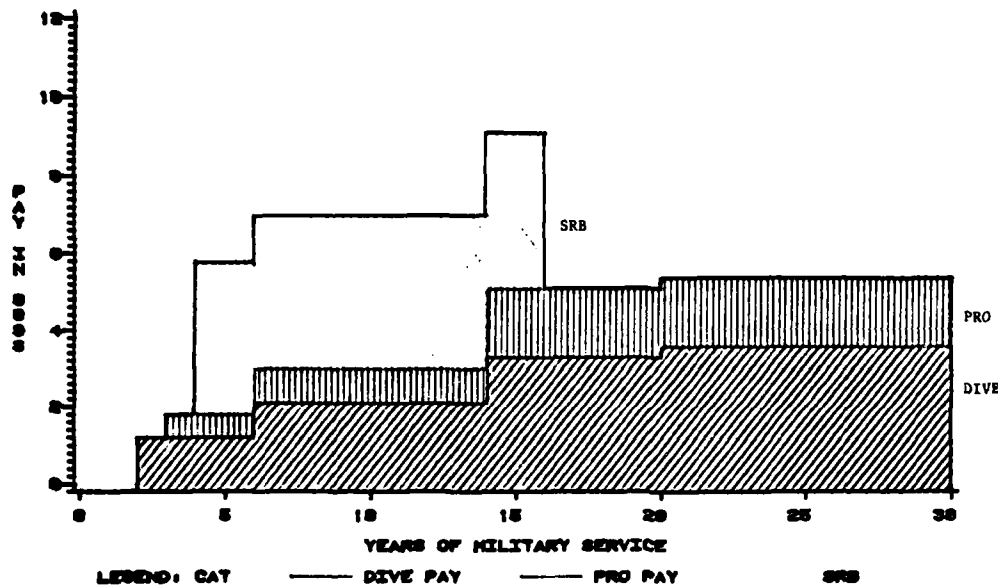
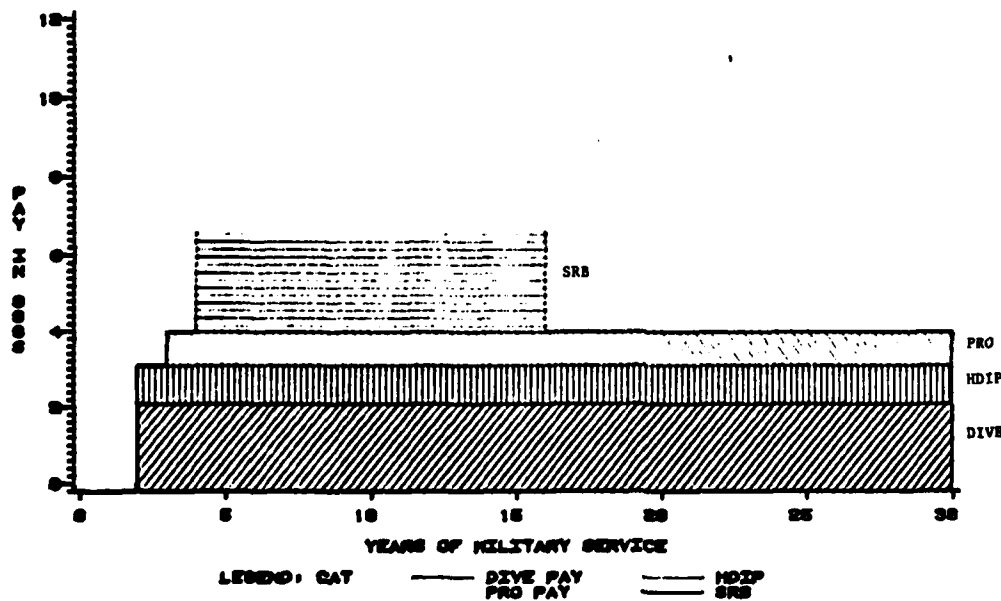


Figure 5

NAVY ENLISTED SEAL/ECOD SPECIAL AND INCENTIVE PAY



3. Comparison. There are numerous methods of compensating civilian divers in private industry. Direct comparison of Uniformed Services Diving Pay to the pay of civilian divers is difficult at best, primarily because of the differences in pay administration between the groups. In general, a Service diver will get the same amount of Diving Pay each month regardless of the number of dives he made. For civilians, the pay is usually tied to either the frequency of dives, depth of the dive, or amount of time actually engaged in diving.

a. Federal Sector. Divers employed by the Federal Government may be compensated by one of two methods. General Schedule (GS), white collar, Federal employees are authorized a 25 percent pay differential. The differential is paid whenever the depth of the dive is greater than 20 feet, whenever visibility is restricted, in rapidly flowing or cold water, whenever vertical access to the surface is obstructed, or when working with hardware which presents special hazards. is administered on a day-by-day basis. That is, an employee will receive the 25 percent differential for all eight hours of any day during which diving duty is performed regardless of the length of time actually engaged in diving.

Federal wage grade employees (blue collar) are compensated in a different manner. Wage grade employees receive a differential of between 175% and 200% of wage grade level 10, step 2, for diving. Wage grade pay rate tables vary with geographic location. These employees are paid the differential on an hourly basis. A current average hourly salary for wage grade divers approximates \$18.00 per hour.

b. Private Sector. A 1977 study of collective bargaining agreements with differentials for hazardous or unusual working conditions, conducted by the U.S. Civil Service Commission, found a variety of methods used in paying divers, some of which are listed below.

- \$ 95.00/day extra
- \$165.00/day flat rate without equipment; \$185.00/day when diver provides his own equipment
- For dives less than 50 feet, \$11.13/hr with a minimum pay per dive of \$78.50
- \$2.00/hr extra at less than 25 feet, \$3.00/hr at 25-60 feet, with negotiated pay for deeper dives; at least 8 hours regular pay and 4 hours premium pay guaranteed for any dive
- \$1.35/ft extra at 50-100 feet depths, plus \$1.85/ft for each foot at 100-150 feet; \$158.00 plus \$2.65/ft for each foot between 150-200

- 100%/hr extra plus \$1.00/ft at 50-100 feet, plus an additional \$.50/ft for each 50 ft increment in depth.

More recent data was supplied by Taylor Diving and Salvage Company, which employs between 150 and 300 divers annually. Their divers are paid on a straight hourly basis for the first eight hours each day and time-and-a-half for overtime. They are not paid on a salary basis but are compensated only for the time spent working as a diver. Divers working for Taylor Diving Company earned between \$3,500 and \$119,000 in 1981. Earnings for a diver between his fifth and tenth year in the diving field are reported as averaging approximately \$35,000 annually. Divers with higher qualifications and willing to work long hours year-round can earn the higher salaries.

By comparison, salaries for typical military divers are displayed in Table 19. Only the E-7 Saturation Diver earns a salary close to the average reported for divers employed by Taylor Diving Company.

Table 19
Salaries of Military Divers

<u>Pay Grade</u>	<u>Diver Category</u>	<u>Average BMC</u>	<u>S&I Pays (Incl. SRB)</u>	<u>Total Salary</u>
E-5	Second Class	\$17,316	\$4,467	\$21,783
E-6	First Class	\$20,595	\$5,667	\$26,262
E-6	SEAL/EOD	\$20,595	\$6,662	\$27,258
E-7	Saturation	\$24,249	\$9,100	\$33,349
E-7	Master*	\$24,249	\$5,400	\$29,649

* Past SRB windows

c. Foreign Armed Forces. Compensation for military divers in other countries is administered at a variety of rates and in a number of different formats. Military Diving Pay for Australia, Canada, France, the Federal Republic of Germany, and the United Kingdom are outlined below. The information reflects 1980 rates and has been converted to U.S. dollars using conversion rates in effect during June, 1980.⁵

- Australia: Ship's divers receive about \$13 per day to a maximum annual amount of \$505. Clearance divers can receive a daily rate "on-occurrence" or a continuous rate of about \$860 per year.

- Canada: Rates for Canadian divers include \$171 per month for Clearance Diving Officers; \$47 to \$64 per month for Ship's Divers; and a daily rate of about \$11 for clearance diving. Special rates include between \$3 and \$13 per day for experimental saturation dives.
- France: French divers are paid approximately \$6 per dive.
- Federal Republic of Germany (FRG): FRG divers are compensated on an hourly basis with rates depending upon the depth of the dive. At depths over 15 meters, a diver would receive approximately \$16 per hour and for depths below 20 meters this rate would increase by \$3 for each 5 meter increment. FRG Combat Divers receive \$100 per month.
- United Kingdom (UK): Normal Diving Pay is between \$70 and \$462 per month based upon qualification. In addition, a Hazardous Duty Diving rate is available and varies according to the depth and the length of the dive.

VI. FINDINGS.

A. There is a need for diving pay now and in the future.

1. Undermanning currently exists in the diving programs of the Navy, Marine Corps, and Air Force.

2. Inability to attract sufficient personnel to diving is considered to be a major reason for current manning shortfalls; however, the full effect of recent increases in diving pay is not yet evident.

3. The most serious current undermanning is in the Navy, specifically in the EOD and Fleet diving programs.

4. Manning shortfalls in the Fleet diving program are at all levels of diving skill. A need exists within the Fleet diving program to provide incentives for skill advancement within the program.

5. Navy requirements for divers are projected to increase in the foreseeable future. This will compound current shortages in the Fleet and EOD communities, and may create new shortages in the SEAL Program.

B. The effectiveness of recent increases in Diving Duty Pay in meeting the need for Service divers is not yet fully evident. This precludes specific findings concerning the appropriateness of the current rates at the present time.

1. The full effects of current rates on diver attraction and retention should be evident two years after implementation. A determination of the effectiveness of current Diving Duty Pay rates should be made at that time (July 1984).

2. Many divers are not being compensated for all the hazardous duties they perform under orders because Diving Pay legislation restricts them to receiving only one Hazardous Duty Incentive Pay. Authorizing payment of all Hazardous Duty Incentive Pays to which a member is entitled would increase the attractiveness of both the SEAL and EOD programs and could improve manning.

VII. RECOMMENDATIONS.

A. A joint Service review to determine the effectiveness of Diving Duty Pay rates be conducted after July, 1984.

B. Section 304 of Title 37 U.S.C be amended to entitle personnel receiving Diving Pay to receive not more than two additional payments under 37 U.S.C 301.

References

1. Report of the Strauss Commission "Differential Pays for the Armed Forces of the United States," Volume II, March, 1953.
2. House of Representatives Report No. 349 accompanying H.R. 4323, 87th Congress, First Session, 4 May, 1961.
3. Senate Report No. 97-146 accompanying S.1181, 97th Congress, First Session, 8 July, 1981.
4. Data provided by AF/MPPP.
5. Report by The General Accounting Office, "Preliminary Analysis of Military Compensation Systems in The United States and Five Other Countries", December 31, 1980.

SUMMARY OF RESPONSES

Diving Duty Pay

- Issues: 1. There is a need for Diving Duty Pay now and in the future.
2. The effectiveness of recent increases in Diving Duty Pay rates is not yet fully evident. A determination of the effectiveness should be made on July 1, 1984.
3. Authorizing payment of all Hazardous Duty Incentive Pays to which a member is entitled would increase the attractiveness of both the SEAL and EOD programs and could improve manning.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Concurs.
Coast Guard	Concurs.
Public Health Service	Concurs.
NOAA	Concurs.
JCS	Concurs.
	Concurs.

LEGISLATIVE IMPLICATIONS

Diving Duty Pay

Amend 37 U.S.C. 304(c) to entitle divers to receive not more than two additional payments under 37 U.S.C 301.

37 U.S.C. 315
SPECIAL PAY: ENGINEERING AND SCIENTIFIC CAREER
CONTINUATION PAY

ENGINEERING AND SCIENTIFIC CAREER
CONTINUATION PAY

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ENGINEERING/SCIENTIFIC CAREER CONTINUATION PAY

I. PURPOSE. The Engineering and Scientific Career Continuation Pay (ESCCP) is authorized to provide an additional incentive for officers with certain engineering and scientific skills to continue serving the military in those skills after completion of initial obligated service. The purpose of this analysis is to determine whether ESCCP is an effective way to deal with shortages in fields where engineering and scientific (E/S) skills are required.

II. DATA SOURCES. In conducting the analysis, several sources of data were used. In general, the National Science Foundation and its various commissions provided data concerning supply, demand, and compensation of E/S personnel. The Department of Labor supplied information useful in comparing the nature of duties, educational requirements, working conditions, employment/unemployment conditions and outlook. Additionally, the DoD completed a Study of Scientists and Engineers in DoD Laboratories in September 1982 which was useful in characterizing service differences in the use of civilian and military E/S personnel. Other reports and surveys by various universities and engineering or services recruiting agencies were also used. To augment these data, field interviews with ESCCP recipients were conducted in Air Force Systems Command Space Division at Los Angeles Air Force Station, California. Finally, the Air Force provided retention and requirement statistics in the appropriate engineering disciplines. Service inputs were essential to document unique aspects of the pay and its intended use. (For a complete listing of sources see the attached bibliography.)

III. HISTORICAL PERSPECTIVE. The Air Force submitted a legislative proposal in 1981 to authorize an accession bonus of up to \$15,000 and a continuation pay for officers completing initial obligation of \$3,000 for each year of additional obligated service of at least one year but not more than four years. In its proposal, the Air Force indicated that since 1978, accessions have not met requirements and there is a nation-wide shortage of engineers. In a separate briefing on the proposal, the Air Force stated that the 4-11 year group continuation rates of these personnel are 13% lower than other support fields. The Congress recognized the growing shortage of engineers and noted that engineering schools produced 17,000 fewer engineers than needed in this country during 1981. This underproduction is continuing. Congress was also aware that starting salaries of engineers are frequently \$6,000 greater (33%) for civilians than military Regular Military Compensation (RMC), and that there is an increased demand for engineers in the private sector. The House Armed Services Committee was thus not surprised with the Services' difficulty in attracting and retaining E/S officer personnel and that the DOD recommended authority for both an accession bonus and continuation pay which would incur additional obligated service. The legislative proposal cited Air Force and Army budget estimates for the bonuses, with the Air Force indicating no immediate need for the continuation pay. At the time of the house report the Army and Marine Corps did not plan to

use either bonus; while the Air Force and Navy did intend using both forms of the bonus. In FY82 Air Force and Navy had planned to pay accession bonuses as follows:

<u>Bonus</u>	<u>Number of People</u>	<u>Cost (millions)</u>
\$ 5,000	200	\$1.0
12,000	308	3.7
15,000	<u>87</u>	<u>1.3</u>
	595	6.0

Moreover, in FY82 these Services anticipated use of the continuation bonus in the following manner:

<u>Bonus</u>	<u>Number of People</u>	<u>Cost (millions)</u>
\$1,000	1000	\$1.0
2,000	650	1.3
3,000	<u>234</u>	<u>0.7</u>
	1884	3.0

The Senate version of the bill [12] contained no bonus provisions for E/S personnel; however, it did contain approval for 3,000 additional AFROTC scholarships and 2,000 additional Navy scholarships. In the conference report it was agreed to authorize the continuation bonus but not the accession bonus. It was felt that this bonus would effectively stem the losses of experienced engineers in skills of critical importance to the Armed Forces. The Uniformed Services Pay Act of 1981 containing provisions for the continuation bonus was signed into law (P.L. 97-60) on 14 October 1981. The Army, Navy, Air Force, Marine Corps and Coast Guard were all authorized the bonus.

The intent of Congress led to several implementation details. First, they required that the Department of Defense forward implementing directives by 31 December 1981. By September 1982, DoD and Air Force directives had been written and only the Air Force was paying the bonus. The Navy decided not to use the pay but reserved the prerogative to later make use of its authority. Second, Congressional intent was to prohibit military personnel already eligible for other accession or continuation bonus payments from receiving the bonus. Third, the administration of the pay was to be designed in such a way as to avoid significant decreases in total annual compensation when an individual is no longer eligible. Table 1 summarizes constraints placed on administration of the bonus at different levels of authority.

Table 1
Engineering and Scientific Career Continuation
Bonus (ESCCP) Constraints on Implementation*

	<u>Public Law 97-60</u>	<u>DoD Directive 1340.15</u>	<u>AFR 36-31</u>
Eligibility (person)	3-19 YOS >3 as engineer grade 01-06 engineering degree	3-14 YOS >3 as engineer grade 01-06 engineering degree	4-11 YOS >3 as engineer grade 01-05 engineering degree
Eligibility (academic degree)	critically short engineering & scientific degrees as defined by DOD	engineering/scientific degrees <90% manned(1)	<90% overall <85% in 4-14 YOS
Bonus	1-4 year contract @ \$3000/year obligated	1-4 year contract @ \$3000/year obligated	4 year contract @ \$3000/year 2500/year for shorter contracts
Method of Payment	lump sum or installment	lump sum or installment	50% lump sum 50% annual installment

*Refer to PL 97-60, DODI 1340.15, AFR 36-31 for additional specific constraints.

Of the engineering disciplines eligible for ESCCP (electrical, mechanical, aero/astro, architectural), not all degree holders are eligible for the bonus shown:

9800	Total degree holders (100%)
- 4100	- rated officer ineligible (42%)
- 2900	- not in 4-11 YOS window (30%)
- 1400	- required in other skills (14%)
1400	Eligible for ESCCP (14%)

These eligibles are from the occupations (AFSCs) of scientific (26XX), system acquisition (27XX), development engineer (28XX), project management (29XX), communication/ electronics (301X, 305X, 309X), computer system (51XX), civil engineer (55XX), and bio-medical research (91XX). In FY82, the first year of bonus authority, the acceptance rate was extremely high as shown in Table 2. Also, acceptance rates for FY83 are matching the FY82 rates. No data was available concerning the number who separated without responding to the bonus offer, or the number of eligible people attracted to eligible positions in FY83 as a result of the bonus.

Table 2
FY82 Engineering and Scientific Career Continuation Pay
Accepting Versus Declining by Academic Degree

<u>DEGREE*</u>	<u>ACCEPTED BONUS</u>	<u>DECLINED BONUS</u>	<u>TOTAL RESPONDING</u>	<u>PERCENT ACCEPTED</u>
Electrical	744	40	784	94.9
Aeronautical	245	10	255	96.1
Mechanical	214	15	229	93.4
Astronautical	70	5	75	93.3
Architectural	56	1	57	98.2
Other	63	0	63	100.0
TOTAL	1,392	71	1,463	95.1

*Aeronautical includes Aerospace, and Electrical includes Electronic Engineering Technologist.

IV. METHODOLOGY. There are several important elements of the study methodology to be addressed in analyzing the effectiveness and the correct application of bonuses to achieve authorized strength and experience levels. They consist of pay comparison, retention comparison, supply/demand analysis, field interviews, and bonus impact. Because the bonus has only been paid since late FY82, there is little historical base to establish rigorous relationships between changes in total pay and changes in retention. Additionally, since no previous pay change was directly intended as a management action targeted at E/S personnel, it is difficult to determine the effect on retention. The coming years should provide empirical evidence sufficient to establish cause-effect interactions. At this point, no single element of the analysis provides enough information to adequately assess the effectiveness of the ESCCP program. However, based on known history of civilian/ military pay ratios, we should be able to approximate the steady state retention rates with a bonus in effect. There are unquantifiable effects that must also be addressed which may affect the interpretation of quantifiable findings. These include: attitude toward bonuses (vis a vis other methods of compensation and reward), taste for military service, and perceived opportunity for civilian employment. In the final analysis, if the bonus is to be effective, it should result in improved retention of experienced personnel to maintain or enhance actual strength to meet authorization levels. (NOTE: The Air Force is the only service currently using ESCCP; hence, all military data is representative of just AF officers.)

V. ANALYSIS.

A. SALARY COMPARISON. A college graduate certainly considers salary when exploring employment opportunities after matriculation. An engineer who chooses the military does so at least partially for money. Furthermore, after completion of initial obligated service, the military engineer must consider income along with many other factors when deciding either to continue military service or to separate and take up civilian employment. The purpose of this subsection will be to compare military salaries with civilian salaries of engineers. The analysis is independent of other factors such as taste for military service, perceived opportunities in and out of the military, and personal considerations which may influence job choice in addition to monetary considerations. This approach is instructive but should not be considered absolute.

To perform this comparison, data was summarized from a February 1982 survey conducted by the Engineering Manpower Commission of over 135,000 practicing engineers working at nearly 1,000 establishments including government and educational institutions.[1] Almost 75% of the respondents represented industrial concerns (including non-manufacturing industry such as research organizations, utilities, etc.); 13% from education; 7% from Government. Only individuals holding at least Bachelors degrees in engineering fields were included in the survey. Each respondent, in addition to annual salary, identified his time since completion of Bachelors degree, geographic location, and type and size of employer. For military officers, annual regular military compensation (RMC) was used in this analysis. RMC includes base pay and allowances, VHA, and tax advantage. Due-course Air Force promotions were assumed.

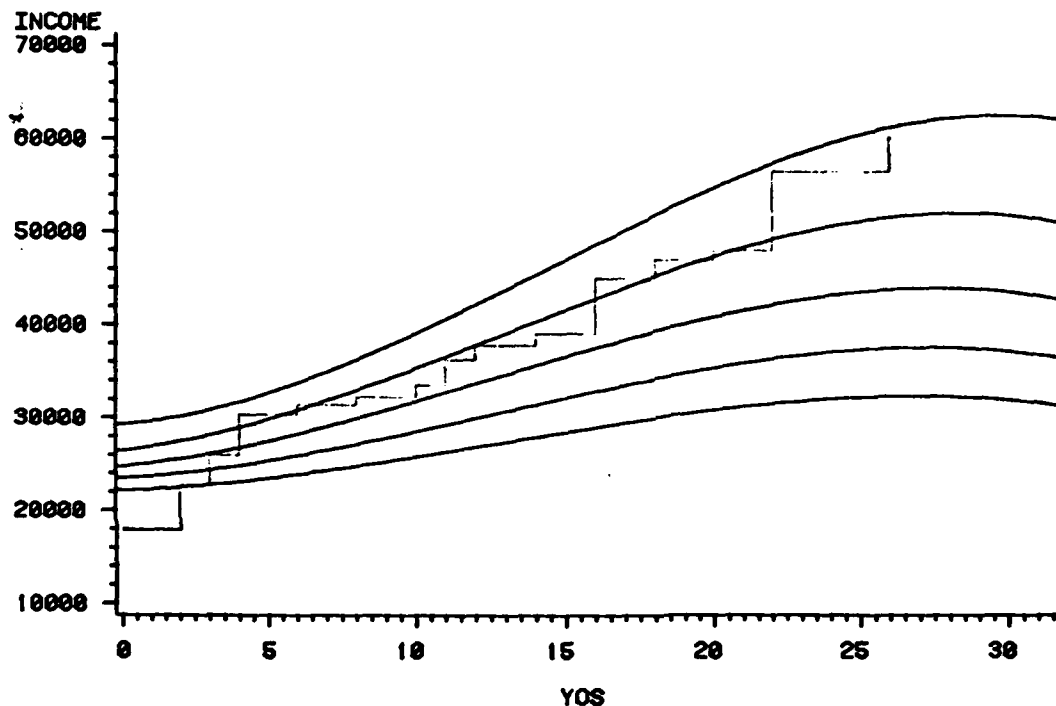
The results of this analysis are depicted in Figures 1, 2, 3, and 4. Some interesting observations can be made from these data. First, it seems clear that starting salaries of engineers in civilian employment are measurably and significantly greater than \$18,640, the starting compensation available to newly commissioned officers. In fact, the new officer's rate is much lower than the 10th percentile. Fewer than 10% of an engineer's peers in engineering school will receive a starting salary of \$19,000 or less. This is true across all engineering disciplines examined. (It should be noted that many college students obligate themselves to military service years before graduation and might not be aware of starting salaries, but the remainder must be recruited from a more informed resource.) The median starting salary of a civilian engineer is 30% greater than that offered by the military. However, the officer can look forward to an accelerated growth of annual compensation not enjoyed by civilian engineers. After completing 4 years of service, the officer will be receiving sufficient compensation to place him near the 75th percentile of engineers that graduated in the same year he did. Provided promotions are made on time, he can expect to remain near the 75th percentile throughout a career. (It is important to note that these curves do not represent the payline to be received by a cohort group graduating in 1982, but rather the income received in 1982 by individuals who graduated at various times in the past.)

The military payline used in this analysis is accurate for any member not receiving special or incentive pays. It is not known whether the starting pay differential for military vs civilian is persistent across all military specialties that are transferable to civilian job markets. Some of the difference may be attributable to deferred compensation (retirement system) or offset compensation (ROTC/ACADEMY scholarship).

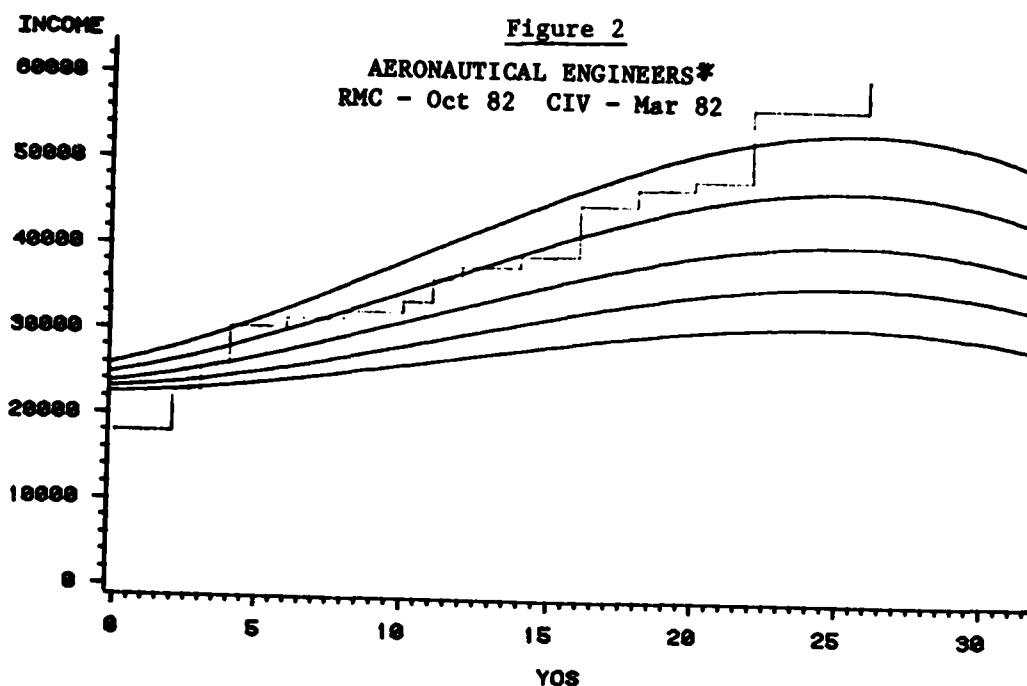
Figure 1

ALL ENGINEERS*

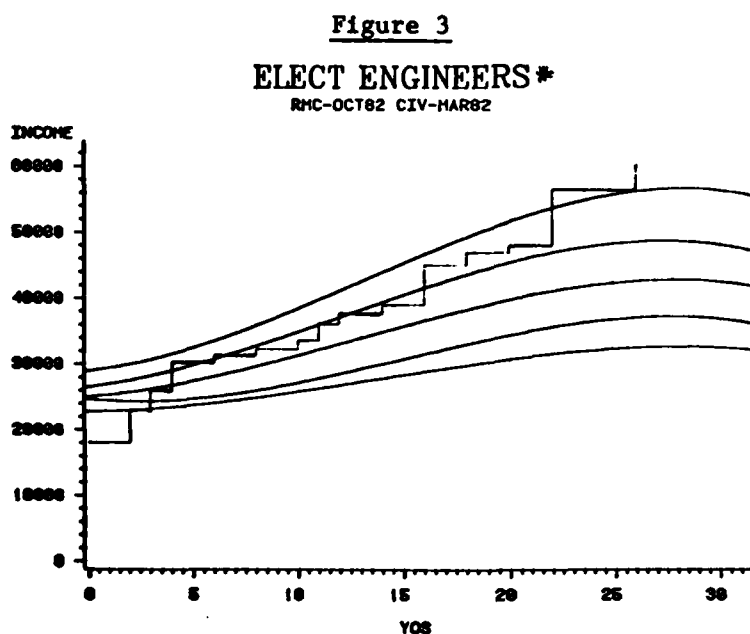
RMC-OCT82 CIV-MAR82



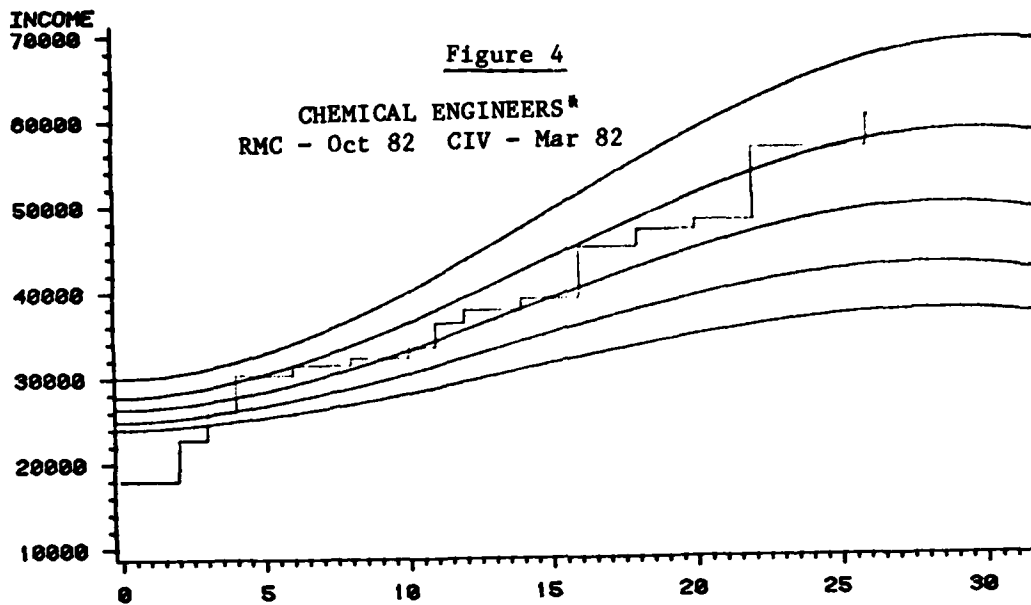
*Jagged line indicates actual military officer RMC assuming due course promotions. Family of smooth curves represents results of Engineering Manpower Commission survey corresponding to the 90th, 75th, 50th (median), 25th, and 10th percentile respectively of annual salary reported by survey respondents. YOS is years of commissioned service and years since bachelors degree for military and civilian engineers, respectively.



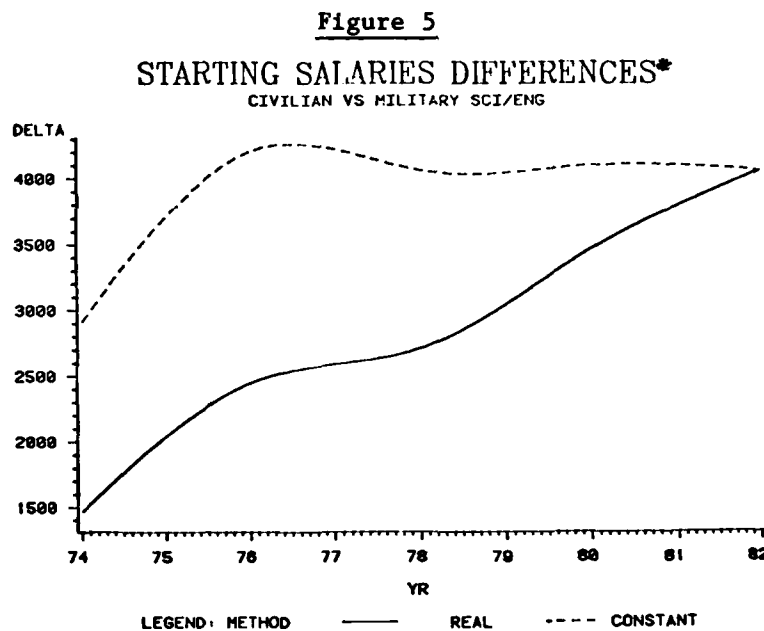
*See legend for Fig. 1 for complete description.
This graph includes only Aeronautical Engineers.



*See legend for Fig. 1 for complete description. This
graph includes only Electrical/Electronic engineers.



*See legend for Fig. 1 for complete description.
This graph includes only Chemical Engineers.



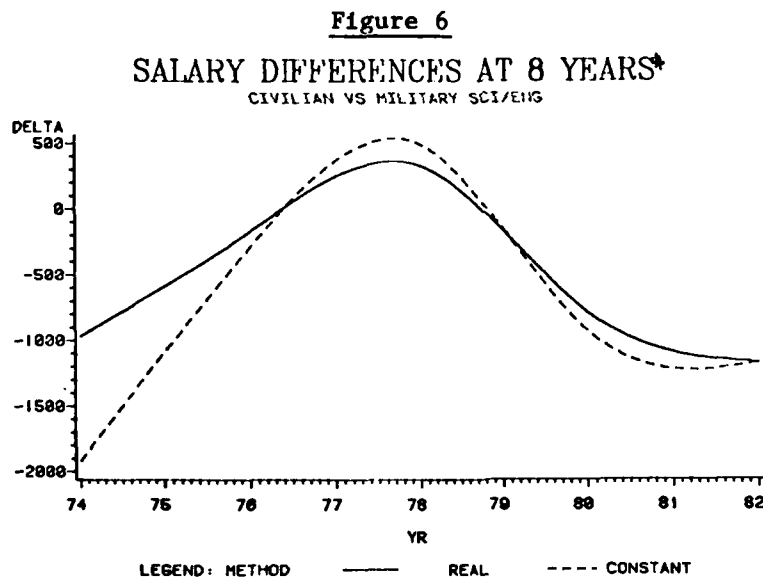
*Civilian median annual starting salary minus average 0-1 starting salary from 1974 to 1982. In real dollars the gap has continuously increased, but since about 1978 it has remained relatively constant when adjusted to 1982 dollars.

Based on these data, some questions need investigation. First, an officer with 5 to 15 years of service leaving military service for an engineering position would have to find a job that pays more than 75% of his civilian peers to remain competitive with military compensation. Are these officers finding such employment? Second, can the military compete in recruiting engineers with a 30% gap in starting salaries? The answers to these questions remain unknown, but additional analysis may provide some clues. What about preceding years? How has the military pay kept pace? Figure 5 shows the difference between civilian and military starting salaries.

Though the gap has continued to widen, when adjusted for inflation, it has been relatively constant at \$4,000 in favor of the civilian since 1978. Prior to 1978, the gap expanded rapidly, peaking in 1976 before leveling in 1978. Since 1978, the Air Force has not met recruiting needs of scientists and engineers.

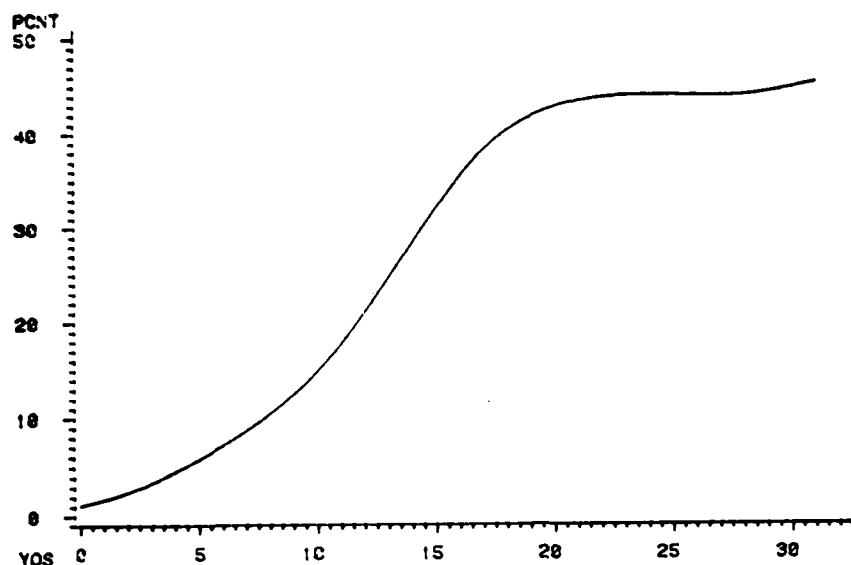
As for experience, personnel salaries of civilians with 8 years were compared with "average captain" RMC. Results are shown in Figure 6. Salaries were roughly comparable around FY78 but otherwise favored military service.

Other aspects of salary comparisons are important, too. Supervisor/non-supervisor salary spreads range from about 15% to over 50%, depending on employer and engineering disciplines, with the largest differential going to supervisory petroleum engineers.[10]



*Civilian median annual salaries of engineers with 8 years of experience minus average Captain salary from 1974 to 1982. Civilians earned less than the military except for a brief period around 1978.

Figure 7
ALL ENGINEERS*
PERCENT SUPERVISORS



*Percent of engineers in supervisory positions measured from time since bachelors degree.

Figure 7 shows the ratio of supervisor to non-supervisor measured since time of receipt of Bachelors degree for all engineers responding to the survey. The steep rise in supervisory opportunity seems to start at about 10 years. However, discussions with military engineers during field interviews revealed that even junior captains perceived that the duty they performed qualified them for supervisory level salaries in civilian employment. Remarks such as "we have the experience equivalent to civilian counterparts several years our senior" were frequently heard. Another factor influencing civilian pay is attainment of advanced degrees. Median salary differentials range up to 22% for PhD versus Bachelors degree and 9% for Masters degree versus Bachelors degree.

Table 3 shows the differentials that existed in 1978 among civilian engineers at various times since completion of Bachelors degree. These spreads may be indicative of the supply vs demand for advanced degree holders in civilian industry. When compared to the military, the supply of advance degree holders employed in civilian industry is relatively scarce. For example, Table 3 shows that 7 years after receiving a Bachelors degree only 25% of civilian engineers had Masters degrees, while Table 4 shows that Captains (roughly equivalent to the civilian example) in skills eligible for ESCCP surpass civilians in advanced degree attainment. Though the AF highly encourages pursuit of post-graduate education, it may be qualifying these officers for higher paying civilian jobs with no similar pay differential for military service.

Table 3
Median Pay Increases for Degrees Beyond Bachelors
and Percent Holding Advanced Degrees*

	Years Since Completion of Bachelors Degree				
	<u>1</u>	<u>5</u>	<u>7</u>	<u>9-11</u>	<u>15-17</u>
<u>MASTERS</u>					
% Holding	10%	22%	25%	27%	27%
% Pay Increases	6%	6%	7%	7%	9%
<u>PhD</u>					
% Holding	0%	3%	4%	6%	9%
% Pay Increases (relative to Bachelors)	-	22%	19%	17%	16%

*Data represents pay increase of engineers only based on 1978 weighted national average. Source: Salaries of Scientists, Engineers, and Technicians, Scientific Manpower Commission.

Table 4
Advance Degree Attainment Within Air Force *

	<u>Lieutenants</u>	<u>Captains</u>	<u>Major</u>	<u>Lt Colonels</u>
26XX				
MASTERS	21.0%	67.0%	52.9%	50.6%
PhD	2.0%	17.9%	25.2%	32.7%
27XX				
MASTERS	3.5%	25.4%	41.8%	50.0%
PhD		1.2%	2.3%	5.9%
28XX				
MASTERS	13.6%	55.0%	61.6%	58.5%
PhD	.5%	6.0%	7.0%	13.7%
51XX				
MASTERS	5.5%	31.6%	50.7%	37.9%
PhD	-	1.1%	1.9%	4.1%
55XX				
MASTERS	4.8%	41.9%	42.2%	58.2%
PhD	.2%	2.1%	2.7%	2.7%

*Academic specialties held may include some degrees not specifically required in the skill. Some inaccuracies may be present since degree holders were measured in Dec 82 while percentages were derived from Mar 83 strength data.

Finally, location of employment creates additional variance in median income. Engineers in Houston, New York, and Los Angeles/San Diego commanded the highest median income.[11] Significant numbers of those eligible for ESCCP are employed in one of these high technology/high pay areas.

B. RECRUITING/RETENTION VS. SUPPLY/DEMAND. In view of the purpose of the ESCCP, it is important to review the other aspects of engineering personnel management: recruiting, retention, continuation, manning, and experience levels. The form and level of military and civilian pay is related to these force characteristics. The engineering shortage exists today primarily as a result of a failure to meet the accessions goals to overcome both losses and the growth in requirements. Secondary factors include rated supplement drawdown and retention lower than AF line averages.

In recruiting, the Air Force has not accessed sufficient numbers to man all E/S positions since FY78 as follows:

	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
Accessions	444	556	577	773	1036
Requirement	565	977	1468	2028	1860
% of required	79	57	39	38	56

In addition, up to 60 officers a year without an engineering degree have been sent to obtain one. The success in FY82 may be the result of deteriorated economic conditions. The AF relied heavily on Officer Training School (OTS) in FY82 with more than half the accessions for these skills coming from that source. An even greater reliance on OTS is projected in FY83.

The AF recognized the severity of the engineering shortage in FY79 and took several steps to solve the problem prior to implementing the bonus:

- Scholarship increases. 85-90% of additional scholarship to engineering/ scientific disciplines. 750 additional in FY 81; 500/year for 6 years beginning in FY82.
- Airmen Education and Commissioning Programs (AECF). Increased program from 200/year in FY78 to 450/year in FY83. Students must pursue engineering (87%) or computer systems (13%) degree. (Old ratio was 80/20).
- Expanded Air Force Institute of Technology undergraduate engineering program (from 25 inputs in FY79 to 240 inputs in FY83). For new and relatively new active duty officers to build upon a non-engineering degree to obtain an electrical or aeronautical engin-degree in 18-24 months.
- College Senior Engineer Program (CSEP). Military pay (E-3) and benefits to college seniors without military formations, uniforms, etc. (255 projected graduates in FY83)
- Cross-flow of qualified engineers back to engineering duty.
- Selective recall to active duty.
- Selective retention of officer deferred for promotion.

With these initiatives and the bonus, the AF is cautiously optimistic that it will achieve full manning by FY85, provided authorizations growth is held at 4%. However, there may still be some shortages of electrical engineers.

Tables 5 & 6 contrast the retention of Air Force engineering/science skills including computer science officers with the retention of the line officer force in aggregate. Data in Table 5 demonstrate a reduced continuation of highly technical officers from 3 years of service to 6 years of service. Aggregating data for FY78 through FY82 results in estimates ranging from 58% for scientific officers to 69% for computer science officers with the AF line average estimated at 70%. To match the line average, development engineers would have to improve continuation from 3 to 6 years by better than 9%. Notice, also, that continuation was very low in FY78 and FY79 but has improved steadily since. Five year averages in all cases are less than recent experience, showing the effect of low retention in FY78 and FY79. Continuation for technical specialties averaged 7.1% lower than AF line in year groups 3-6. In year groups 7-11, Table 6, continuation for technical specialties averaged 6.8% lower than AF line. The cumulative effect of diminished continuation in these time periods is lasting through 20 years, as shown in Figures 8-10. Using 5 year averaged continuation rates from the beginning of the 3rd year to the end of the 11th year, reflects .51 for AF line and .44 for technical skills. This is 12.8% less than the AF line - very close to the 13% difference used to justify the pay. However, in FY82 the difference was 7.75%, indicating that retention of technical personnel is improving relative to the AF line. Credit for this improvement cannot be wholly attributed to ESCCP, however, since no one had received the pay until the very end of FY82. The sluggish economy might also have had an impact.

Table 5
Estimates of the Probability of Continuation from
Beginning Third Year of Service to End
of Sixth Year of Service* (Non-rated)

<u>FY</u>	<u>AF LINE</u>	<u>26xx</u>	<u>27xx</u>	<u>28xx</u>	<u>51xx</u>	<u>COMB</u>
78	.58	.47	.55	.54	.66	.57
79	.63	.42	.32	.52	.65	.54
80	.74	.62	.69	.64	.68	.66
81	.75	.64	.71	.70	.72	.70
82	.80	.73	.69	.77	.73	.80
AVG	.70	.58	.66	.64	.69	.65

*Continuation rates shown are estimates of the probability of completing the sixth year of service given that an individual enters the third year of service. They are computed for each FY by multiplying actual retention rates (1 - actual loss rates) for year groups 3, 4, 5, and 6 in the indicated FY. No attempt was made to estimate the improvement resulting from the bonus.

Table 6
Estimates of the Probability of Continuation
from Beginning of Seventh Year of Service to the End
of the Eleventh Year of Service* (Non-rated)

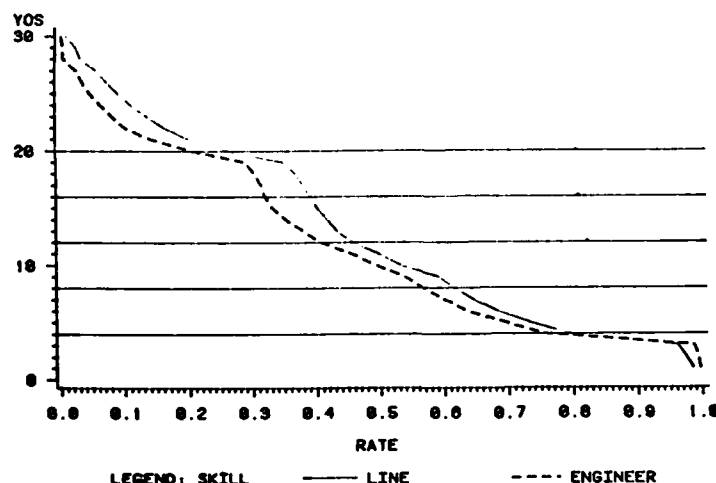
FY	AF LINE	26xx	27xx	28xx	51xx	COMB
78	.73	.68	.71	.66	.59	.66
79	.69	.68	.49	.69	.59	.64
80	.75	.61	.76	.77	.57	.69
81	.70	.68	.70	.69	.68	.69
82	.76	.83	.78	.79	.60	.74
AVG	.73	.68	.69	.72	.61	.68

*Estimates were computed as in Table 4 for year groups 7, 8, 9, 10, and 11 to estimate probability of continuation from the seventh to eleventh year of service.

The analysis presented here tacitly assumes that it is desirable for continuation rates of engineers to be similar to the Air Force line aggregate levels. This is appropriate for comparative purposes but may not be useful in determining the level of the pay. Section C addresses this aspect of the ESCCP bonus program.

Figure 8

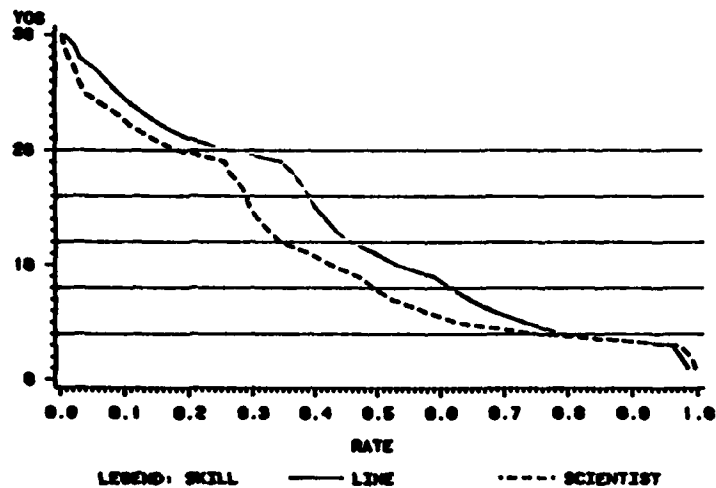
CONTINUATION RATES*
ENGINEER VS NON RATED LINE



*For length of service 1 year through 30 years (vertical axis) an estimate of the probability of remaining in service (horizontal axis) that long is plotted. Estimates are based on actual loss rates by year group for the time period 78-82. Engineers include only 28xx designated officers.

Figure 9

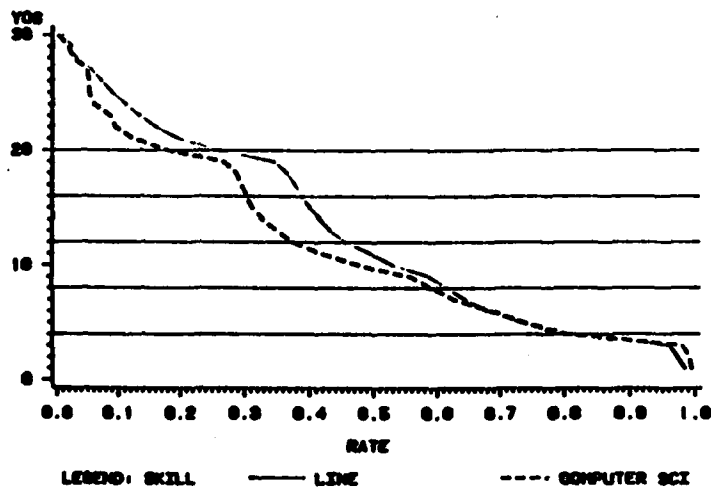
CONTINUATION RATES*
SCIENTIST VS NON RATED LINE



*See Fig. 8 for detailed explanation. Scientific officers include only 26xx designated officers.

Figure 10

CONTINUATION RATES*
COMPUTER SCI VS NON RATED LINE

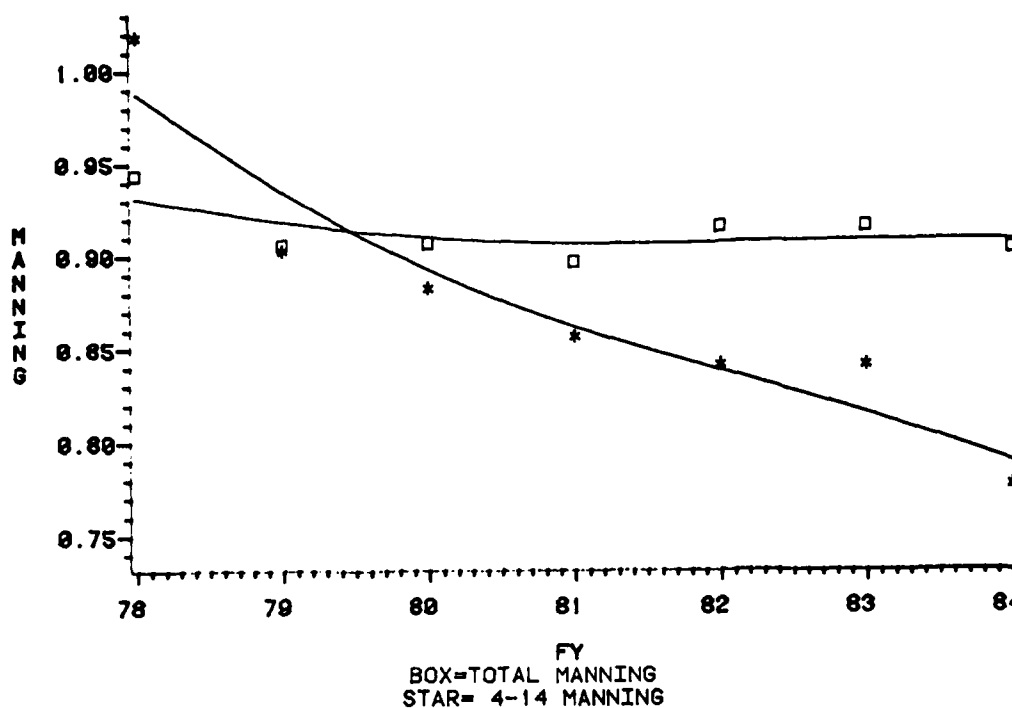


*See Fig. 8 for detailed explanation. Computer Science includes only 51xx officers.

Since FY78 technical skills have experienced manning reductions in mid-management billets, but have remained relatively stable in overall skill manning. This has held true in an environment of constant increases in total authorized skill strength and low continuation rates relative to non-rated AF line averages. Even with stability in total manning, technical skills have experienced manning shortfalls in their mid-management billets. Figure 11 shows that for scientific officer (26XX) total manning has improved while requirements for middle management (4-14 years of service) have suffered setbacks.

Figure 11

ENG/SCI MANNING* SKILL=26XX

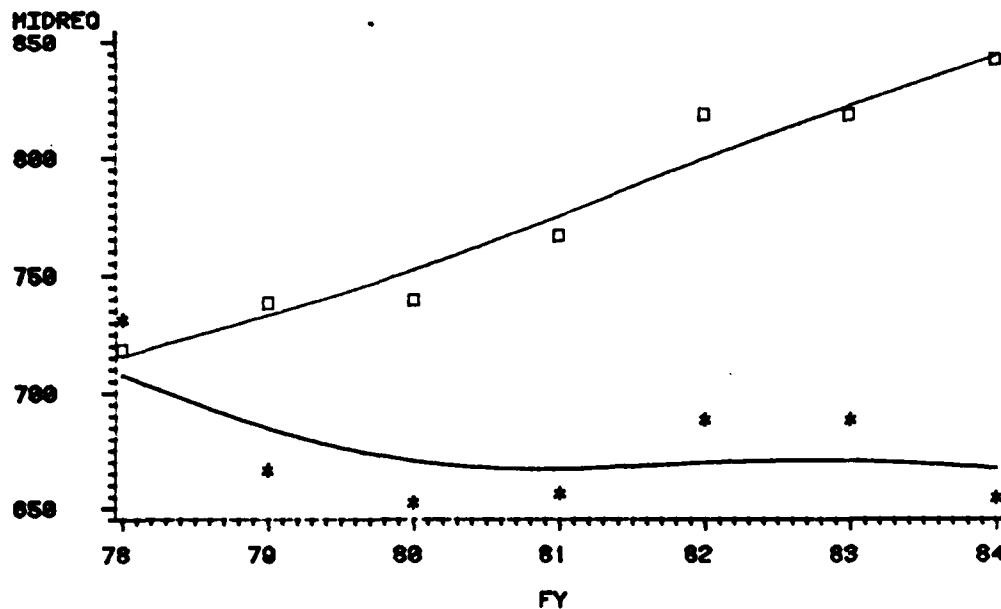


*Data on assigned strength divided by required strength. Data for FY 83 and FY 84 are projections based on retention experience in the absence of a bonus. Required strength is students plus transients plus designated authorizations.

Figure 12 shows that even with relatively constant mid-management strength, requirements are growing at the rate of 100 per year. So, the reduced manning of mid-management is partially the result of increased requirements. If requirements continue at this pace, improvements must be made in retention of mid-management personnel and accessions of qualified engineers.

Figure 12

ENG/SCI GROWTH* SKILL-20XX



BOX=4-14 REQUIRED
STAR= 4-14 ASSIGNED

*Projections for FY 83 and FY 84 based on known future requirements and retention experience in the absence of a bonus.

DoD Directive 1340.15 [3] specifies that an academic engineering or scientific discipline qualifies for ESCCP if the supply of available people with these technical disciplines is less than the requirement. This shortage must be 10 percent or more (other requirements also apply). In FY82, 1,252 officers received the ESCCP bonus - over 90% of those to whom it was offered. The distribution of recipients by type of academic degree is shown in Figure 13, with Figure 14 indicating the AFSC distribution.

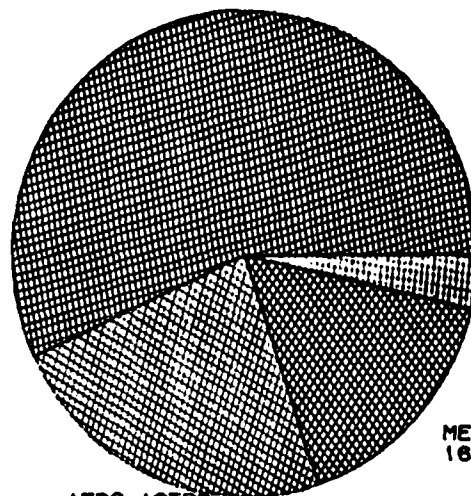
Figure 13

ESCCP RECIPIENTS BY DEGREE

FY 82

PERCENT OF DEGREE

ELECTRICAL
58.87%



ARCHITECT
3.67%

MECH
16.21%

AERO ASTRO
23.24%

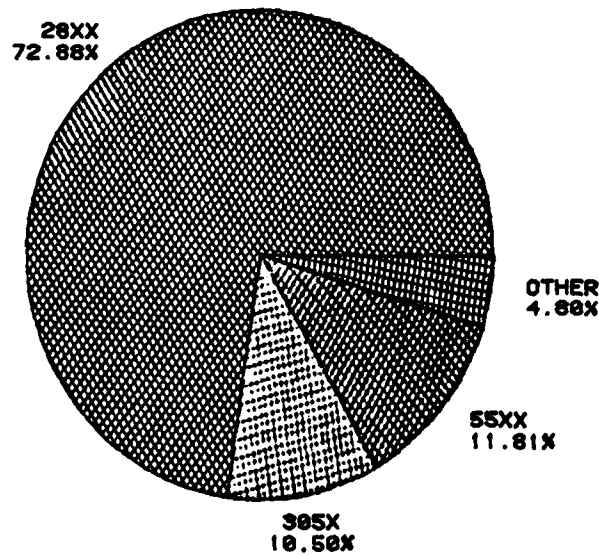
*All eligible engineering degree specialties are shown here. A total of 1252 received the bonus. No scientific degree specialty met the criteria for a bonus in FY82.

Figure 14

ESCCP RECIPIENTS BY SKILL

FY 82

PERCENT OF SKILL



**"Other" includes 26XX, 51XX, 301X, 309X, and 91XX accounting for all of the eligible skills.

Table 7 shows the degree requirement versus inventory for various academic specialties used in the skills previously discussed. The data on the left can be used to determine if DoD criteria are satisfied for bonus eligibility. The Air Force places a further restriction that requires the 4 to 12 year group supply to be less than 85% of requirement. Although the right half of the table shows 4-14 manning rather than 4-12 based on the AF restriction, the data still clearly indicates that the supply of mid-level engineering degree holders is worse than overall degree manning similar to the analysis by skill. However, it is not uncommon in any officer skill to have low mid-level manning but higher total manning because fewer authorizations are coded as lieutenant slots than can practically support requirements at higher grades.

Table 7
Requirement vs Supply of Engineer and Scientist*

	Lt. Col. and Below			4-14 YOS		
	Reqmt	Supply	%	Reqmt	Supply	%
ENGINEERING						
Electrical	3,992	2,911	73	2,187	1,466	67
Astronautical	772	568	74	464	285	61
Architectural	288	229	80	151	114	75
Mechanical	1,229	1,018	83	638	442	69
Aeronautical	1,128	967	86	616	458	74
Nuclear	185	178	96	-	-	-
Civil	782	911	116	-	-	-
Industrial	347	500	144	-	-	-
TOTAL	8,723	7,282	83	4,056	2,765	68
SCIENCE						
Physics	521	869	167			
Meteorology	513	1,096	203			
Ops Research	1,000	2,296	230			
Chemistry	249	938	376			
Other Sci	211	2,033	963			
Behavior Psych	154	2,076	1,348			
TOTAL	2,648	9,308	352			

*Requirement based on stated authorizations in engineering or scientific skills plus a prorated share of collateral skills.

C. ESCCP RATES. Currently the AF pays \$12,000 ESCCP bonus in return for a 4 year obligation and \$7,500 for a 3 year obligation. Fifty percent of the bonus is paid on acceptance and the remainder in annual installments. In FY82 a significant number of those accepting the bonus had existing service obligations. For this group the amount of previously unobligated service "purchased" by the bonus is determined by offsetting service obligated prior to acceptance of the bonus. The magnitude of this effect is unknown but must be accounted for in determining bonus effectiveness. In the future, the AF should be able to more accurately estimate the bonus impact by accounting for this effect. The AF did not specify the desired improvement in annual retention rates in justifying the bonus, only their failure to meet recruiting objectives and the growth in new requirements. Even after the pay has been observed for some time and the improvement factor is estimated, the AF would still need to quantify the desired improvement to determine if the rates are satisfactory. Today, there is no operational model to relate pay with retention for officers. By DoD and AF policy the bonus is terminated when the gap between inventory and requirement is sufficiently narrowed. Any bonus level that produces some improvement in manning can be considered appropriate in the absence of other goals.

D. BONUS IMPACT. In FY82 the cost of the ESCCP bonus was approximately 6.3 million dollars. During the first year it was paid to 1,252 because of the large number of initial eligibles. From FY83 and beyond, however, it is anticipated that about 550/year will elect the bonus. Table 8 shows the anticipated cost for the next few years. Only time will tell what improvement in retention will result from this expenditure.

Table 8
ESCCP BONUS COSTS (\$000's)

	<u>New Payments</u>	<u>Previous Obligations</u>	<u>Total Cost</u>
FY82	\$ 6,316	\$ 0	\$6,317
FY83	2,554	2,447	5,001
FY84	3,558	2,811	6,369

E. ENGINEERS IN OTHER SERVICES. In conducting this analysis the management of engineering resources in other Services should not be overlooked. However, a direct comparison with the Air Force retention and manning of these resources would not be useful in assessing appropriateness of the bonus. Too many differences exist in the way Services use engineers. These differences were highlighted recently in a Study of Scientists and Engineers in DoD laboratories.[7] In DoD laboratories utilizing military from Army, Navy, and Air Force over 2/3 of the military engineers are from the Air Force. They find that "only in the Air Force laboratories is the military a major component of the Engineering and Scientific work force." The Army civilian military ratio is almost 20:1 (20 civilian engineer to 1 military engineers). The Navy ratio is 50:1 but the Air Force ratio is only 2.4:1. In addition to the fact that other Services rely very heavily on civil service employees for Engineering and Scientific jobs, they also have military career patterns significantly different from that of an Air Force engineer. In the Navy, most engineering positions are in the restricted line and they rely heavily on lateral accessions from the unrestricted line after approximately 6 years. The Army accesses approximately 400 Engineering and Scientific graduates, but only after 8 years are these resources assigned to Engineering and Scientific billets. A recent Army study [14] recognized some of the problems with this career progression and recommended an alternative that would remove engineers from traditional combat leadership career progression starting at the end of the second year. At present, however, except under very limited circumstances, only the Air Force accesses and immediately assigns engineers to positions requiring their specialty. These fundamental differences in personnel management make interservice comparisons too complex to be useful for this analysis. Other Services are now able to adequately fill engineering positions within their present personnel management systems. The manning of these positions is not critical and no bonus is appropriate now or in the immediate future.

F. GENERAL OBSERVATIONS. The pay was authorized 14 October 81 with instructions that implementing plans be forwarded to Congress by 31 December 81. Though the AF was prepared early in 1982 to begin payment of the bonus, congressional appropriations and budgeting considerations delayed implementation until September 82 when the FY82 Supplemental Appropriation Bill became law. Personnel Offices were informed of the authority on 10 Sep 82. During field interviews, eligible officers stated that the message left them with the impression that if they did not sign an agreement by the end of the month (Sep), funding for the next FY might not be available. This was perceived as being somewhat unfair.

The apparent disagreement between retention rates of experienced engineers and the seemingly competitive pay, requires further explanation. During interviews with AF engineers, there was a consensus that the AF provides project management skills and experience earlier than other employers; hence, they can command higher civilian salaries earlier than their peers. Also mentioned were ideas that other employers prefer the AF experience and are willing to pay a premium to get it. Some engineers leave because of both these factors.

The high acceptance rate for the bonus should be viewed cautiously because the law permits payment to individuals with other service commitments. It is, therefore, very difficult to determine how much additional service is extracted. Air Force Institute of Technology commitments, for example, are common among engineers. Some viewed this as equitable by arguing that their basic pay was too low for their skill and it was a differential independent of other commitments like medical pays and ACIP. Others saw inequities, i.e., some officers with prior enlisted service had 16 or more years of service and were eligible for the bonus. Also, there are instances where two people in the same career field, working on the same job, at the same location may find that one is ineligible because he doesn't have a qualifying degree. Degree shortages are harder to understand and accept than skill shortages since authorized positions don't specify academic requirements, except for positions requiring advanced degrees.

Congress and DoD permit lump-sum payments but the AF chose 50% lump-sum and 50% installment, similar to the SRB policies. In SRB studies, there are strong indications that lump-sum payments can achieve better retention at lower cost than installment payments. Many service members eligible for such bonuses prefer having a choice of several payment plans, as indicated during field interviews.

The reduced bonus for 3 year contracts vs 4 year contracts is probably an effective way of inducing longer contracts. This practice has been shown to be common and effective in other bonus programs.

Although there are large differences between civilian and military starting salaries, Congress chose not to authorize the requested accession bonus. Instead, elsewhere in the 1981 Pay Act, they authorized an

increase in ROTC scholarships. To the Air Force this increase was from 6,500 to 9,500 and it was to be phased in at 500 per year. Currently, economic conditions favor the military so it is too early to tell whether the scholarships will serve more effectively than the requested accession bonus as a recruiting tool.

The Continuation Pay (ESCCP) was authorized but is new and has a very short performance history. Like the scholarship program, it is also too soon to accurately quantify the relationship between the bonus and retention. The analysis shows that pay is competitive, yet retention is lower than the Air Force five year average. Paying bonuses by academic specialty rather than job specialty to solve these problems is a new approach and may require additional data systems to formalize document, and quantify requirements by degree to insure auditable tracking to desired objectives.

VI. FINDINGS.

A. Notwithstanding some difficulties associated with the application of the continuation bonus, it should be left in its present form to determine improvements achieved over time. In view of its recent implementation, there is currently no real basis for change.

B. There is a disparity between military and civilian starting pay; however, the effects of the increased ROTC scholarships and continuation bonus should be examined before considering any major modifications such as an accession bonus.

C. Title 37 U.S.C authorizes this pay for the "armed forces." Public Health Service and the National Oceanic and Atmospheric Administration are "Uniformed Services" not authorized to use this bonus. Because there is no immediate critical need in these Services, this should not preclude them from the authority to implement this incentive in the future if the need should arise. The statute should apply to all Uniformed Services.

VII. RECOMMENDATIONS.

A. Retain Engineering and Scientific Career Continuation Pay in its present form.

B. Amend Title 37 U.S.C. 315 to read "uniformed services" vice "armed forces".

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SUMMARY RESPONSES

Engineering/Scientific Bonus

Issues.

1. Retain ESCCP in its present form.
2. The effects of the increased ROTC scholarships and continuation bonus should be examined before considering any major modifications such as an accession bonus.
3. Authorize all "Uniformed Services" to utilize the pay rather than only the "Armed Services."

Department

Responses

Air Force

Concurs.

Navy

No objection.

Army

Concurs.

PHS

Concurs.

NOAA

Concurs.

Coast Guard

Defers to QRMJ judgment.

LEGISLATIVE IMPLICATIONS

Engineering and Scientific Career Continuation Pay

Amend Title 37 U.S.C. to authorize this pay for "Uniformed Services" vice "armed forces".

37 U.S.C. 308a
SPECIAL PAY: ENLISTMENT BONUS

37 U.S.C. 308f
SPECIAL PAY: BONUS FOR ENLISTMENT IN THE ARMY

ENLISTMENT BONUS

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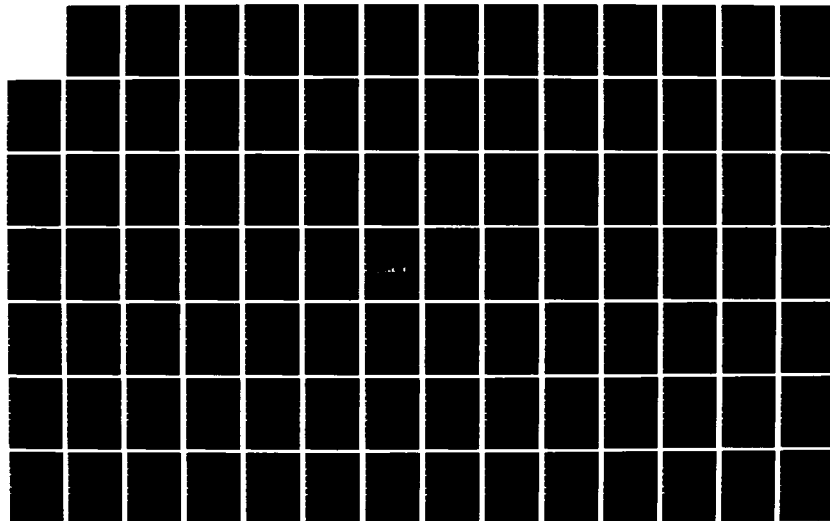
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VOLUME 3 SPECIAL AND INCENTIVE PAYS(U) OFFICE OF THE
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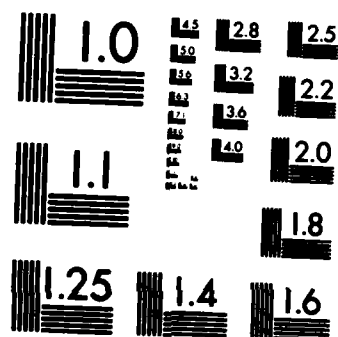
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

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ENLISTMENT BONUS

I. PURPOSE. The purpose of the Enlistment Bonus (EB) is to increase the number of initial enlistments in military specialties experiencing critical personnel shortages.

II. DATA SOURCES. Data were obtained from the Service Staffs of the Army, Navy, Marine Corps and Air Force. The Coast Guard, NOAA and the Public Health Service do not use Enlistment Bonuses. Additional data were obtained from reports submitted annually to the Office of the Secretary of Defense which contain manning, bonus and training data. Although not a primary data source, field interviews were conducted at Ft. Meyer, VA, Cherry Pt. MCAS, NC, Edwards AFB, CA, and Navy Recruiting Command, Washington, DC.

III. HISTORICAL PERSPECTIVE. Monetary incentives in addition to regular pay have always been necessary to attract personnel to the military. These incentives, in the form of Enlistment Bonuses or "bounties", have usually been based on the length of the enlistment in shortage skills with the higher payments going to the more critical skills and to the longer terms of enlistment. The Enlistment Bonus authority dates back to a 1776 resolution of the Continental Congress which offered a cash "bounty" to spur enlistments. Enlistment Bonuses fluctuated from \$3 to \$16 per enlistment during the late 1700's and early 1800's until the Act of January 17, 1814 (3 Stat. 94) boosted the bonus to \$124, considered a substantial payment at that time. Enlistment bonuses remained unchanged until the Mexican War, when the Act of February 11, 1847 (9 Stat. 123) established a bounty of \$100 in treasury script or 160 acres of public land to those who enlisted in the Army for 12 months or longer.

Although the use of the Enlistment Bonus diminished after the Mexican War, it was important in raising military forces until termination of the Civil War. During that time Enlistment Bonuses fell from favor because they proved ineffective and were subject to abuse. The federal bounty had increased to a peak of \$402 during the Civil War. Furthermore, states, counties, and municipalities also paid a bounty as high as \$1,500, causing fierce competition.

The Enlistment Bonus never completely recovered from its Civil War reputation and was virtually non-existent for the next 100 years when it was restructured and given a different name. In fact, shortly after the United States entered World War I, Congress, in the Act of May 18, 1917, excluded any personnel from receiving a bounty to enlist in the military service of the United States. Only for a brief period in 1920 did Congress' attitude soften when, in the Act of June 4, 1920 (Pub. L. No. 66-242), they granted a \$90 bonus, payable at the end of the term of enlistment, to persons enlisting in the Army for three years. However, this provision was repealed the following year, and no further provisions for Enlistment Bonuses were made until 1971.

The current Enlistment Bonus program had its beginning on September 28, 1971, when the President signed the Military Selective Service Act (Pub. L. No. 92-129), which provided for the payment of an Enlistment Bonus of not more than \$3,000 to certain persons who enlisted in a combat element of an armed force for a period of at least three years. The bonus was designed to stimulate an increased number of initial enlistees in specialties plagued by chronically inadequate volunteer levels. Payments were restricted to those enlistments made on or before June 30, 1973. Actual use of the bonus did not begin until June 1, 1972, when the Army and Marine Corps tested the effectiveness of the program with a \$1,500 bonus offered to 4-year enlistees in an infantry, artillery, or armor career fields. Enlistments into these combat skills declined when draft calls ended and the bonus amount was increased on May 1, 1973, to \$2,500. Furthermore, the Army began a test of an expanded bonus program to cover 12 new combat technical skills in addition to the three original ground combat skills. However, Congress did not believe the bonus should be expanded and limited it only to enlistments or extensions in the skills of infantry, artillery, or armor (Act of July 9, 1973 (Pub. L. No. 93-64)). They also extended the bonus authority to June 30, 1974.

In accepting the bonus limitations, the House conferees¹ did so with the understanding that further bonus consideration would not be precluded in that session of Congress. This action was in reference to the Uniformed Services Special Pay Act, a DoD legislative proposal originally submitted in 1972. The proposed legislation would ensure adequate manning of the Uniformed Services in an all-volunteer environment. It provided flexible authority for payment of an expanded Enlistment Bonus by extending the authority to any enlisted skill which the Secretary of Defense determined to be in critical supply. The measure passed the House but the Senate did not act on the bill prior to adjournment of the 92nd Congress. This Uniformed Services Pay Act was resubmitted as The Uniformed Services Special Pay Act of 1973 in the first session of the 93rd Congress during April 1973, but languished there until December at which time the Senate Armed Services Committee introduced the "Armed Forces Enlisted Personnel Bonus Revision Act of 1974." Signed on May 10, 1974, this Act became Public Law 93-277, with an effective date of June 1, 1974, and an expiration date of June 30, 1977. It removed the combat arms limitation from the Enlistment Bonus program and permitted a bonus payment of up to \$3,000 to persons enlisting for four or more years or extending an initial enlistment for a similar period in any skill designated as "critical." Since the 1974, Act the Enlistment Bonus authority has been extended six times. Appendix A contains a complete listing of these extensions.

Additional changes to the basic bonus legislation were made by the Uniformed Services Pay Act of 1981 (Pub. L. No. 97-60). Bonus amounts were further increased from those approved in the Department of Defense Authorization Act of 1981 to \$8,000. The increases were adopted out of concern for the "need to ensure that the active armed forces not only have the total number of persons required, but that those recruited... have the ability to use and maintain the increasingly more sophisticated

weapons with which those forces are now being equipped" and the belief that the "resources needed to attract the number and kinds of people required must be provided."²

The Uniformed Services Pay Act of 1981 also adopted a special provision authorizing the Army to pay a maximum bonus of \$4,000 for a three-year enlistment, provided the enlistee had graduated from high school and had received a percentile score of 50 or higher on the Armed Forces Qualification Test (AFQT). The conference report accompanying the legislation directed the Secretary of Defense to implement a test of the full range of new bonuses to determine whether these bonuses could produce an enlisted profile adequate to meet the specialized needs of the modern Army.³ The Enlistment Bonus Test was developed by the Department of Defense with the assistance of the Department of the Army and the Rand Corporation. The test began June 29, 1982, and will continue through June 1984.

The number of personnel receiving Enlistment Bonuses and related costs are reflected in Table 1. The Air Force did not use the Enlistment Bonus authority until 1981; the Navy suspended its use of the program in 1977 and 1978. The Army and the Marine Corps are the only Services that have consistently used the program.

IV. METHODOLOGY. As previously stated, Enlistment Bonuses are used to increase enlistments into shortage skills. This analysis will evaluate the effectiveness of Enlistment Bonuses in accomplishing this purpose. In determining bonus effectiveness, this report will rely heavily on the Army and Marine Corps, who have used Enlistment Bonuses regularly since 1972. Representative skills were selected for each Service in reviewing their bonus programs. The following questions were addressed during the review of Enlistment Bonuses:

1. Has the Enlistment Bonus Program been effective in alleviating both quantity and quality shortages in the Services?
2. Are the criteria by which Enlistment Bonus skills are selected and eliminated appropriate?
3. Are Enlistment Bonuses cost effective?
4. Is there a need for Enlistment Bonuses in the future?

Table 1
Enlistment Bonuses
(Total Obligation of New Payments)

Fiscal Year	Army		Navy		Marine		Air Force		DoD	
	Number	Dollars (million)	Number	Dollars (million)	Number	Dollars (million)	Number	Dollars (million)	Number	\$M
1972	250	.4	-	0	772	1.2	-	0	1,022	1.5
1973	22,825	34.4	-	0	4,319	6.5	-	0	27,144	40.9
1974	16,360	38.8	-	0	2,080	4.2	-	0	18,440	43.0
1975	21,355	\$52.3	378	0.6	2,674	\$ 5.9	-	0	24,407	58.8
1976+T	29,919	69.0	369	0.6	3,323	8.1	-	0	33,611	77.7
1977	12,205	26.4	-	0	2,653	5.5	-	0	14,858	31.9
1978	12,296	28.4	-	0	2,445	5.7	-	0	14,741	34.1
1979	14,707	34.6	450	0.9	3,123	7.1	-	0	18,280	42.6
1980	14,858	39.7	1,908	3.2	3,480	7.7	-	0	20,246	50.6
1981	18,176	56.8	3,456	5.4	2,898	7.2	1,137	2.2	25,667	71.6
1982	13,352	58.0	2,647	4.0	797	2.2	55	0.1	16,851	64.3
1983 Est	14,587	71.4	308	0.5	969	3.5	250	0.4	16,114	75.8
1984 Est	16,036	76.2	3,883	6.1	1,232	4.4	198	0.2	21,349	86.9

*"Number" = number of new payments.

**"Dollars" = value of the new payments; i.e., total obligations for the new payments, assuming all are paid in lump sum

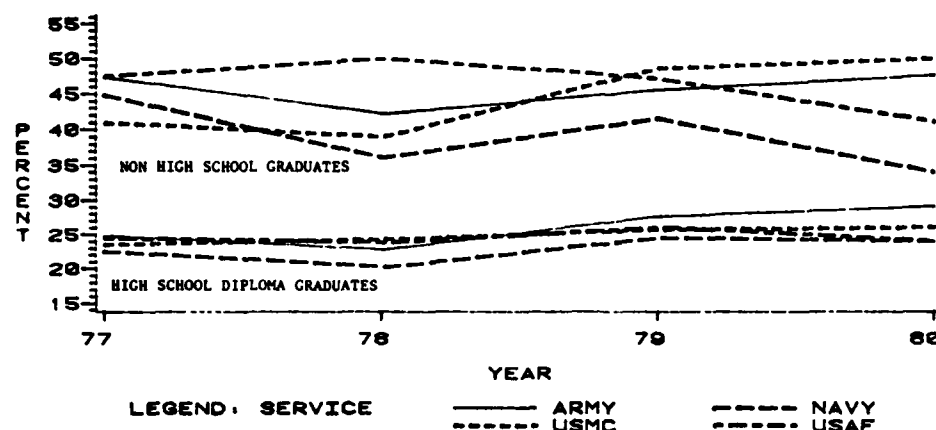
VI. ANALYSIS. At the end of the draft era, much concern was voiced within DoD about the ability of the Services, especially the Army and Marine Corps, to meet their manpower requirements for combat arms skills in terms of both quantity and quality. At that time, two-thirds of the Army's combat arms skills were comprised of draftees and Regular Army unassigned personnel (enlistees in Regular Army without an option to train in a specific skill but placed where needed most). Bonuses were believed necessary to offset the perceived displeasures associated with the combat arms - fewer jobs with civilian applicable skills, more discomforts, lower prestige, and greater potential for combat exposure. It was believed that regular pay alone would not have attracted sufficient quality enlistees to achieve recruiting objectives. The Army and Marine Corps have used an Enlistment Bonus since that time for combat skills, with a further expansion into various technical skills. In later years, the Navy and the Air Force also began payment of bonuses in critically short areas. The question is whether the Enlistment Bonus has been effective in alleviating these recruit shortages.

A. QUANTITY AND QUALITY. Enlistment Bonuses are normally targeted to personnel who the Services generally believe will have higher retention, fewer disciplinary problems and be exceptional performers. This basically equates to high school graduates (HSG) in AFQT Categories I through IIIA (See Table 2). Non-high school graduates (NHSG) are twice as likely to leave the service before completing their first 3 years as depicted in Figure 1. (NOTE: actual rates will fluctuate depending on service accession criteria for a particular year.)⁴ Therefore, recruiters strive to enlist a higher percentage of high school graduates to reduce first-term attrition. In the Army, between 70 and 75 percent of the personnel receiving Enlistment Bonuses complete their full term of service in the bonus skill or a related career progression skill. Although precise Marine Corps data are not available, a conservative estimate would indicate a similar completion rate for Marine Corps bonus recipients, as overall Marine Corps attrition is slightly lower than the Army. Since failure to complete enlistments increases the turnover of personnel and drives up training costs, the rate of attrition becomes an important consideration.

Table 2
Armed Forces Qualification Test (AFQT) Category
Compared to AFQT Percentile

<u>AFQT Category</u>	<u>AFQT Percentile</u>
I	93-99
II	65-92
IIIA	50-64
IIIB	31-49
IV	10-30
V	1-9

Figure 1
SERVICE ATTRITION PATTERNS*
HSDG COMPARED TO NHSG
FOR 36 MONTHS OF SERVICE



*ACTUAL COHORT ATTRITION USED
FOR FY77-79, FY80 IS PROJECTED

Studies have found that the enlistment incentives most appealing to potential recruits are cash bonuses and educational benefits.⁵ Furthermore, training for a skill is an important inducement to enlist. The Congressional Surveys and Investigation Staff in a report to the House Appropriations Committee reported that "the enlistment bonus program is a most vital tool in attracting enlistees to critical job skills in the military."⁶ These critical skills have gradually shifted from combat arms toward more technical skills. Fifty-two percent of Air Force enlisted personnel serve in technical skills, while Navy, Marine Corps, and Army skills are about 55, 31, and 40 percent technical, respectively. The Services expect the number of technical skills to grow during the next 10 years, as more sophisticated weaponry enter the inventory.

Because of the decline in the birth rate during the 1960's and 1970's, there will be fewer 18-year-old males throughout the early 1990's.⁷ Adding to this problem are the Congressionally set enlistment standards for 1983 through 1987. Sixty-five percent of Army male enlistees during this period must be high school graduates. Furthermore, no more than 20% of the accessions in any Service can be in Category IV (AFQT percentile of 30 and below). This forces the Services to compete for quality personnel. Bonus recipients are generally in Categories I-III; categories usually excluded from receiving Enlistment Bonuses represent approximately 47% of the population.⁸ Additionally, enlistments are affected by a variety of factors. These include: variation in youth unemployment rates; trends in military pay versus civilian pay; the Enlistment Bonus

itself, its amounts and skills; and changes in educational benefits. Other less significant, but nevertheless influential, factors are unfavorable military publicity, public opinion of the military, lower requirements which produce fewer enlistments, and changing youth attitudes concerning the acceptability of military service.

In addition to quantity, the Enlistment Bonus should be controlled for quality, to insure not merely body count, but also the channeling of the right people to the right jobs. Table 3 represents the quality standards for each Service. The Services have found the best single predictor of successful completion of military service to be high school graduation while AFQT Category relates directly to trainability.

Table 3
Service Quality Requirements
for Enlistment Bonus

<u>Education</u>	<u>AFQT Category</u>
Army - High School Diploma Graduate Only	I,II,IIIA
Navy - High School Diploma Graduate or Graduate completing GED,CPT, the Home Study High School Course	Categories that qualify for skill (Cat I-IV)
Marine Corps - High School Diploma Graduate Only	I,II,IIIA
Air Force - High School Diploma Graduate or equivalent	I,II,III

As will be shown later, quality is improving for the Services. The weak economy of the early 1980's has undoubtedly caused some people to enlist who otherwise would have taken civilian jobs or gone directly to college. Consequently, as the economy improves, quality accessions may once again become a scarce commodity. Therefore, Enlistment Bonus criteria must be set to attract people from the 53% of the population that are qualified. Service needs should be thoroughly analyzed before lower AFQT Categories are recruited with an Enlistment Bonus.

Personnel may be attracted by a bonus to specialties in which they otherwise may not have enlisted. In addition, the bonus diverts people to less attractive skills possibly freeing jobs that attract applicants more easily. The key to the bonuses, especially for the Army and Marine Corps, is that they acquire personnel for longer enlistments in skills that may not be transferrable to civilian occupations. This reduces turbulence, enhances readiness, and lays a foundation for a quality enlisted career force.

1. Army Bonus Program. The Army Enlistment Bonus Program represents approximately 80% of the total DoD budget for Enlistment Bonuses. The Army pays bonuses up to \$8,000 to qualified personnel who enlist for 4 years. The following eligibility requirements apply for all non-prior service and prior service enlistees in all bonus Military Occupational Specialties (MOS):

- a. Must be a high school diploma graduate.
- b. Must be in AFQT Category I,II, or IIIA.
- c. Must enlist for a period of four or more years (3 years for some recipients during expanded bonus testing).
- d. Prior service enlistees must not have previously received an Enlistment Bonus or be currently entitled to a reenlistment bonus.
- e. Prior service enlistees must not have completed more than four years previously and must have had a break in service of more than three months since their last separation.

The bonus is paid upon successful completion of the individual's training and award of the MOS. Table 4 shows the number of skills in which the Army paid bonuses to individuals going to critical areas. As a percentage of total MOSs, the number has remained fairly constant. Changes during the 1980's are the result of careful reviews of skill manning and the associated changes to meet Army quality and quantity needs.

Table 4
Army Enlistment Bonus Program

	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Number of MOSs Paid	34	34	30	39	50
% of Total MOSs	11%	11%	9%	12%	15%

First-term manning levels of four selected bonus skills to which the Army currently pays Enlistment Bonuses are shown in Table 5. The Army has seen overall improvement throughout the early 1980's in these skills. Although some of this can be attributed to the economy, pay increases and other incentive programs, the Enlistment Bonus attracted personnel who would not have entered these skills otherwise. Based on a survey of initial enlistees, the Army reports that in 1982, 46 percent of bonus enlistees would have chosen another Army job if a bonus had not been available; 11 percent would have joined another Service; and about 2 percent would not have enlisted at all.¹⁰ Similar questions were asked in the 1979 DoD Survey conducted by the Rand Corporation. That survey shows that 26% would have chosen a different Army MOS; 3% would have joined another service; and 3% would not have enlisted (Appendix B).

Table 5
Army Bonus MOS Manning Levels
First Term (YOS 1-3)

<u>Skill</u>	<u>% Manned</u>			
	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
11B Infantryman	97.9	93.6	95.0	102.1
11C Indirect Fire Infantryman	97.4	96.5	84.1	97.6
19CMF Armor	85.9	110.5	112.3	104.7
98G EW/SIG INT Voice Interpreter	67.0	77.2	87.2	98.8

Table 6 shows that soldiers who receive the bonus in three selected combat arms skills have attrition rates as much as 20 percentage points lower than their non-bonus peers.

Table 6
Army Bonus Recipient Attrition Compared
to Non-Bonus Recipients (% loss)

<u>MOS</u>	<u>Accession Years</u>					
	<u>1978</u>		<u>1979</u>		<u>1980</u>	
	<u>Bonus</u>	<u>Non-Bonus</u>	<u>Bonus</u>	<u>Non-Bonus</u>	<u>Bonus</u>	<u>Non-Bonus</u>
11B	26	38	29	42	18	31
11C	24	34	29	44	24	39
19CMF	22	42	29	42	18	38

The Army requires that Enlistment Bonuses not only fill shortages in selected skills but enhance the recruiting of higher AFQT category high school diploma graduates (HSDG). These personnel, however, are the most difficult to attract to military service. Despite the expected decline in the nation's 17-21 year-old population during the 1980's, the Army's projected quality accession needs have increased in order to provide an adequate flow throughout the first-term force and to meet operational and maintenance requirements of the modern battlefield. For example, the Army will require a 6 percent increase of AFQT Category I-III A from 1983 to 1988 (83,000 to 88,000 personnel) in addition to other categories of high school graduates. The difficulty will be overcoming the propensity of these quality individuals to select other Services over the Army, as reflected in Table 7.¹¹ The Army is attempting to close this gap through the use of increased bonus levels.

Table 7
HSDG(M) Who Expressed a Positive Propensity
To Join a Service (Percent)

AFQT Category	Army	Navy	Marine Corps	Air Force	Coast Guard Reserves
I-III A	14.7	24.6	11.0	43.3	6.4
IIIB-V	23.8	14.0	13.0	40.3	8.9

Army's quality data from representative combat arms and technical skills show that the Enlistment Bonus is pulling higher AFQT category personnel into these skills (Table 8). Some MOSs experienced declines in 1979 and 1980 due possibly to the lean recruiting year and the eroding value of total compensation to include the Enlistment Bonus. However, in 1981 bonus levels were increased along with the substantial pay raises for the military. In addition, educational incentives in the form of the Ultra Veterans Educational Assistant Program (UVEAP) were established. Therefore, it is not possible to definitively establish the total effect of the bonus separately.

Table 8
Army Enlistment Bonus Recruits by
AFQT Category
(Percent of Category Who Took Bonus)

MOS	1978		1979		1980		1981		1982	
	Cat I-II	Cat III	Cat I-II	Cat III	Cat I-II	Cat III	Cat I-II	Cat III	Cat I-II	Cat III
11B	58%	48%	47%	29%	48%	22%	63%	42%	62%	60*
11C	60	55	40	27	38	19	60	36	*	*
19D	55	47	55	37	45	29	68	54	68	62
98G	46	50	72	50	85	83	95	83	95	93
Army Total	47	38	46	28	49	24	60	42	61	57

*All 11 skills combined into 11X in 1982 used by Army in reporting recruiting data only.

Table 9 reflects the number of payments per bonus level since FY78. While not all MOSs are paid the maximum bonus levels, quality and quantity increases occurred throughout the bonus skills, indicating not only the importance of the bonus itself but of the complete incentive package for recruits. Improvements in numbers of quality personnel, however, do coincide with bonus increases when one compares Tables 8 and 9.

Table 9
Army Bonus Payments
(Number of Payments per Amount)

<u>FY</u>	<u>\$1000</u>	<u>\$1500</u>	<u>\$2000</u>	<u>\$2500</u>	<u>\$3000</u>	<u>\$3500</u>	<u>\$4000</u>	<u>\$5000</u>
78	-	1658	-	10366	-	-	-	-
79	121	2707	-	10300	1579	-	-	-
80	112	1800	-	3759	9181	-	-	-
81	31	1236	-	4858	7587	523	1560	2381
82	-	230	117	2102	2343	1987	194	14004

High School Diploma Graduate (HSDG) data, often described as the most accurate predictor of success in the military, are shown in Table 10. While many skills do not show significant increases over the years, it is interesting to note that as high as 95% of the soldiers in certain MOSs are HSDGs that received an Enlistment Bonus. In the total spectrum of combat arms skills, the percentage of HSDGs has grown from 41% in FY80 to approximately 85% in FY82, a 44% increase. Table 11 shows the AFQT category breakout which is used to predict trainability of recruits. For 1983, AFQT Categories IIIB and IV are not eligible for an Enlistment Bonus although the Delayed Enlistment Program (recruits are allowed to delay commencement of active duty for several months after actual enlistment) and long training lengths may result in payments to these categories in 1983-1984.

Table 10
Army Enlistment Bonus MOSs
High School Graduate Breakdown

TOTAL ACCESSIONS IN BONUS SKILLS

<u>MOS</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
*11B	10965	12829	16292	5544	-
*11C	2263	3017	3591	1338	*14834
19D	1275	3267	4057	1802	1643
98G	733	681	679	814	735
 TOTAL BONUS SKILLS (Overall Army)	 39459	 40747	 51283	 31564	 44398

TOTAL HSDG ACCESSIONS IN BONUS SKILLS

<u>MOS</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
*11B	7156 (65%)	6442 (50%)	6338 (39%)	3711 (67%)	-
*11C	1673 (74%)	1414 (47%)	1328 (37%)	834 (62%)	*12537 (85%)
19D	793 (62%)	1748 (54%)	1802 (44%)	1242 (69%)	1367 (83%)
98G	705 (96%)	673 (99%)	666 (98%)	806 (99%)	729 (99%)
 TOTAL BONS SKILLS (Overall Army)	 26706 (68%)	 22616 (56%)	 23482 (46%)	 22950 (73%)	 38142 (86%)

HSDG's WHO TOOK THE BONUS

<u>MOS</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
*11B	4884 (68%)	3778 (59%)	3946 (62%)	2314 (62%)	-
*11C	1092 (65%)	773 (55%)	661 (50%)	454 (54%)	*6941 (55%)
19D	556 (70%)	1189 (68%)	1146 (64%)	694 (56%)	916 (67%)
98G	325 (46%)	482 (72%)	571 (84%)	759 (95%)	695 (95%)
 TOTAL BONUS SKILLS (Overall Army)	 13824 (52%)	 11474 (51%)	 13445 (57%)	 12520 (55%)	 21095 (55%)

*All 11 MOS combined into 11X in 1982 for reporting purposes only.

Table 9 reflects the number of payments per bonus level since FY78. While not all MOSs are paid the maximum bonus levels, quality and quantity increases occurred throughout the bonus skills, indicating not only the importance of the bonus itself but of the complete incentive package for recruits. Improvements in numbers of quality personnel, however, do coincide with bonus increases when one compares Tables 8 and 9.

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High School Diploma Graduate (HSDG) data, often described as the most accurate predictor of success in the military, are shown in Table 10. While many skills do not show significant increases over the years, it is interesting to note that as high as 95% of the soldiers in certain MOSs are HSDGs that received an Enlistment Bonus. In the total spectrum of combat arms skills, the percentage of HSDGs has grown from 41% in FY80 to approximately 85% in FY82, a 44% increase. Table 11 shows the AFQT category breakout which is used to predict trainability of recruits. For 1983, AFQT Categories IIIB and IV are not eligible for an Enlistment Bonus although the Delayed Enlistment Program (recruits are allowed to delay commencement of active duty for several months after actual enlistment) and long training lengths may result in payments to these categories in 1983-1984.

Table 11
Army Enlisted Bonus MOSs
AFQT Category Breakout

TOTAL ACCESSIONS IN BONUS SKILLS

MOS	1978			1979			1980		
	I-II	III*	IV	I-II	III*	IV	I-II	III*	IV
11B	2162(20%)	7677(70%)	1126(10%)	2061(16%)	9704(76%)	1064(8%)	2117(13%)	13120(81%)	1055(7%)
11C	369(16%)	1604(71%)	290(13%)	272(9%)	2420(80%)	325(11%)	254(7%)	2955(82%)	382(11%)
19D	234(19%)	924(73%)	116(9%)	479(14%)	2564(78%)	256(8%)	366(9%)	3442(85%)	249(6%)
98C	687(96%)	30(4%)	1(<1%)	645(95%)	36(5%)	0	538(79%)	140(21%)	1(<1%)

TOTAL IN 8045(20%) 26809(68%) 4605(12%) 7004(17%) 29939(74%) 3804(9%) 8097(16%) 39817(78%) 3369(7%)
 BONUS SKILLS
 (Overall Army)

MOS	1981				1982			
	I-II	IIIA	IIIB	IV	I-II	IIIA	IIIB	IV
11B	1505(27%)	1144(21%)	2115(38%)	758(14%)	4636(32%)	2946(20%)	3430(24%)	3564(24%)**
11C	270(21%)	213(16%)	595(44%)	259(19%)				
19D	261(22%)	201(17%)	436(36%)	314(26%)	595(36%)	360(22%)	457(28%)	219(14%)
98C	630(92%)	41(6%)	9(1%)	2(<1%)	673(94%)	39(5%)	4(1%)	0(0%)

TOTAL IN 7983 5794 10019 7589 14736 9209 11132 8903
 BONUS SKILLS
 (Overall Army)

ACCESSIONS WHO TOOK THE BONUS

MOS	1978			1979			1980		
	I-II	III*	IV	I-II	III*	IV	I-II	III*	IV
11B	1259(58%)	3668(48%)	43(4%)	977(47%)	2850(29%)	6(<1%)	1024(48%)	2935(22%)	6(<1%)
11C	220(60%)	883(55%)	9(3%)	110(40%)	665(27%)	3(<1%)	96(38%)	568(19%)	2(<1%)
19D	129(55%)	431(47%)	1(1%)	246(55%)	959(37%)	2(<1%)	165(45%)	987(29%)	2(<1%)
98C	314(46%)	15(50%)	0	465(72%)	18(50%)	0	457(85%)	116(83%)	0

TOTAL IN 380(47%) 10141(38%) 98(2%) 3211(46%) 8369(28%) 23(<1%) 3950(49%) 9535(24%) 19(<1%)
 BONUS SKILLS
 (Overall Army)

MOS	1981				1982			
	I-II	IIIA	IIIB	IV	I-II	IIIA	IIIB	IV
11B	959(64%)	540(47%)	813(38%)	5(<1%)	2852(62%)	1450(49%)	2379(69%)	14(<1%) **
11C	162(60%)	101(47%)	190(32%)	2(<1%)				
19D	177(68%)	107(53%)	238(55%)	2(<1%)	407(68%)	207(58%)	299(65%)	1(<1%)
98C	595(94%)	34(83%)	9(100%)	2(100%)	637(95%)	37(95%)	3(75%)	0(0%)

TOTAL IN 4833(61%) 2676(46%) 3928(39%) 25(<1%) 8918(61%) 4520(49%) 7093(64%) 38(<1%)
 BONUS SKILLS
 (Overall Army)

*Category III A/B breakouts not available

**All 11 MOS combined into 11X in 1982 for reporting purposes.

In 1981 Congress authorized expanded bonuses up to \$8,000 for enlistment into the Armed Forces. It also authorized a maximum bonus of \$4,000 for a three-year enlistment into the Army providing the enlistee was a HSDG and scored 50 or higher on the AFQT (AFQT Category I-III A). The Secretary of Defense was directed to test the full range of the new bonuses. Accordingly, DoD, with the assistance of the Department of the Army and the Rand Corporation, developed a test program which commenced on 29 June 1982 and is expected to continue through June 1984. Selected test areas were established with differing bonus levels and terms of enlistment ranging from no bonus to \$8,000 for four years. Since the test is still in progress, conclusions cannot be drawn at this time. However, preliminary indications are that the bonus increases have not significantly expanded the market but are useful as distribution tools to enlist quality individuals into specific skill areas - primarily combat arms and high technology skills.

2. Navy Bonus Program. The Navy applies the Enlistment Bonus to skills characterized by chronically inadequate volunteer levels. Navy's EB is targeted towards highly technical, training-intensive skills rather than combat arms. Approximately 8% of the total DoD budget for Enlistment Bonuses is used by the Navy. The Navy pays bonuses up to \$2,000 to qualified enlistees who extend normal enlistment by 12 months or more, often 5- to 6-year terms of enlistment. All non-prior service and prior service personnel in all skills must meet the following eligibility requirements:

a. High school graduate (or meet Navy GED standards) and otherwise meet all requirements for the program in which enlisting.

b. Enlist for a minimum period of four years and sign an agreement to extend enlistment for a period of at least 12 months.

c. Successfully complete the required course of instruction, continue in the program and be designated in the guaranteed rating or Navy Enlisted Classification (NEC).

d. Prior service enlistees must have had a break in service of more than three months following last separation and must not have previously received an Enlistment Bonus or currently be entitled to a reenlistment bonus.

Little use was made of bonuses prior to 1980, consequently, limited data are available on the Navy's bonus program. Table 12 shows the number of skills in which the Navy has paid Enlistment Bonuses since 1980.

Table 12
Navy Enlistment Bonus Program

	<u>1980</u>	<u>1981</u>	<u>1982</u>
Number of skills paid	11	13	13
% of Total skills	11%	13%	13%

First-term manning levels of four selected skills that receive bonuses are reflected in Table 13. Even with the bonus, basic pay and allowance increases, and the effect of a poor economy, the Navy is having some manning problems in several bonus skills. Since the Navy's bonus program began in 1980, personnel will not complete a full term under a bonus obligation until 1985. Therefore, retention data are not available.

Table 13
Navy Bonus Skill Manning Levels

		% Manned				
<u>Skill</u>		<u>1978</u>	<u>1979</u>	<u>*1980</u>	<u>1981</u>	<u>1982</u>
SM	Signalman	92	93	91	94	92
CTR	Cryptologic Technician	95	104	102	88	98
MS	Mess Management Specialist	94	88	91	105	106
GM	Gunners Mate	118	115	101	90	88

*bonus began

Of the members who have received an EB, only persons in the nuclear field are eligible, at present, to reenlist. This is due to the option for nuclear personnel to reenlist at the two-year point on their initial enlistment contract. Other skills will reenlist at the 5 years-of-service mark in 1985. First-term nuclear retention for FY82 was 42%, while all-Navy retention in the first term was about 50%.

Studies have not been conducted by the Navy to determine the numbers of enlistments that bonuses create in certain skills. However, it would be expected that some personnel would have signed for the skill without the bonus, but not necessarily for the increased commitment. Our analysis of the 1979 DoD survey shows that about 25% would have chosen another job or not have enlisted in the Navy (Appendix B).

Unlike the other Services, the Navy does not use a AFQT Category cut-off to bonus qualification if personnel meet the requirements of the skill. Consequently, bonuses are being paid to Category IIIB (IIIL) and IV recruits. This practice should be somewhat diminished by the new Congressional limits on the total numbers of Category IV recruits. AFQT category data for 1981 and 1982 in four representative bonus skills are shown in Table 14. Cryptologic Technician (CRT/T) and Gunners Mate (GM)

skills experienced an increase of Category I-III A recruits proportionately. For GM skills, some credit for this increase may be due to the bonus since the percent of bonus acceptances increased also. However, the percent of recruits accepting a bonus in CTR/T skills declined in all categories. Both Signalman (SM) and Mess Management Specialist (MS) skills reflect a decline in higher quality accessions and reduced acceptances of the bonus by qualified personnel. This may indicate a decline in the value of the bonus to high quality recruits, at the skills' current payment levels. Reductions in the percent of acceptances may be the result of an unwillingness overall to accept the extra service commitment associated with the bonus.

Table 14
Navy Enlistment Bonus Skills
by AFQT Category

Skill	1981				1982			
	Cat I-II	III A	III B	IV	Cat I-II	III A	III B	IV
SM	225	183	63	8	163	223	62	2
CTR/T	224	102	235	2	265	222	137	9
MS	264	450	743	332	235	322	949	220
GM	221	225	163	32	167	149	98	11

Recruits Receiving Bonus

Skill	1981				1982			
	Cat I-II	III A	III B	IV	Cat I-II	III A	III B	IV
SM	85(37%)	72(39%)	18(30%)	0	48(30%)	53(23%)	11(17%)	0
CTR/T	134(60%)	44(43%)	158(67%)	0	106(40%)	90(40%)	46(33%)	0
MS	105(39%)	211(47%)	316(43%)	178(54%)	72(31%)	103(32%)	304(32%)	65(30%)
GM	53(23%)	78(35%)	51(31%)	0	61(36%)	61(41%)	47(48%)	6(55%)

In some skills, over 50% of Category IV personnel received a bonus payment. In fact, in MS skills, which were 100% manned, 68 percent of the bonus payments went to Category III B and IV enlistees; in GM skills, 30 percent. Although enlistees do not receive the bonus until after their school completion, historically, lower AFQT category personnel have had higher drop out rates as AFQT category refers generally to a person's trainability. Recruiting these personnel into skills with high training costs may eventually prove not to be cost effective.

For example, the GM rate has a training cost of approximately \$21,000, with a course completion rate of 78%. Losing any personnel from this course is expensive. Educational level breakdowns by skill were not available.

3. Marine Corps Bonus Program. The Marine Corps has used the Enlistment Bonus as a tool both to recruit quality Marines into specific shortage skills and to access them in a time-phased manner to coincide with formal school seat availability. The current Marine Corps bonus plan offers 5 award levels, giving flexibility in the assignment of skills to higher or lower award levels, as skill criticality changes. The award levels of \$5,000, \$4,500, \$3,500, and \$3,000 are comprised of 5 to 38 non-comparable skills (skills are not necessarily similar, i.e., personnel clerk and construction surveyor in same award level). A recruit enlisting in a specific award level is guaranteed training and assignment to one of the skills in that award level. The following eligibility requirements apply to Enlistment Bonus recruits:

- a. Be a high school diploma graduate;
- b. Be in AFQT Category I, II or IIIA for \$3,000 award level, the remaining award levels require AFQT Category I or II;
- c. Enlist for at least four years (\$5,000 award level requires 6 years minimum);
- d. Prior service recruits must have been separated from the military service for more than 3 months, not have previously received an Enlistment Bonus, and not have previously received nor currently be entitled to a reenlistment bonus. Bonus payment is made upon assignment of a bonus eligible MOS above the basic or trainee level. The number of skills that were paid an Enlistment Bonus is shown in Table 15. A reduction in the number of skills paid coincides with a reduction of critical MOSs from 170 in 1980 to about 119 currently.

Table 15
Marine Corps Enlistment Bonus Program

	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Number of MOSs Paid	107	106	106	64	63
% of Total MOSs	27%	26%	26%	16%	16%

The Marine Corps program differs from the other Services in the manner in which the bonus is marketed and the fact that enlistees are not guaranteed a specific skill, but a grouping of non-comparable skills. Marine recruiters offer prospective enlistees the minimum incentives necessary to obtain an enlistment. The Enlistment Bonus is offered only to recruits who would have left the recruiting station without

enlisting. Recruits are guaranteed that they will be trained and assigned to one of a number of bonus-eligible skills within an award level. Assignments are then made based on Marine Corps needs, i.e., MOS criticality, school seat availability and individual qualifications. This method has proved quite effective when one compares manning levels in five occupational fields in FY79 and then in FY82 (Table 16).

Table 16
Marine Corps Bonus Manning Levels
% Manned

<u>OCC Field</u>	<u>FY79</u>		<u>FY82</u>	
	<u>First Term</u>	<u>Total</u>	<u>First Term</u>	<u>Total</u>
28 Data/Comm Maintenance	73%	78%	103%	92%
59 Electronics Maintenance	63	69	85	74
60 Aircraft Maint	90	92	103	114
0311 Rifleman	90	90	101	100
64/64 Avionics	86	71	97	98

As for the other Services, some of the manning improvements could be a result of the compensation gains of the 1980's and the weakened economy. However, a 1982 Center for Naval Analysis report ¹² determined that if a bonus had not been available, about 21 percent would have chosen another MOS, approximately 4 percent would have enlisted in another Service, and 5 percent would not have enlisted at all. This study used the 1979 DoD Survey and mirrors our results (Appendix B).

Although bonus recipients increase their term of service commitments, many of the Marine Corps non-monetary incentives require a 4-year enlistment, and only about 35 percent sign up for less than 4 years.¹³ Therefore, the Marine Corps relies on the EB mainly to increase recruit quality to the various eligible MOSs. This is especially true for the Combat Arms skills. Table 17 shows the AFQT category breakdowns of Enlistment Bonus accessions for 1978 through 1982 for two selected combat skills. These two skills utilize a large number of recruits, and data show that higher quality personnel are, indeed, being recruited. Changes were made in 1982 to restrict bonuses to Category IIIA and above; however, the numbers reflect the people who were paid in that year (some Category IIIB and IV enlistees were actually recruited in 1981 when qualifications were lower), since personnel are not paid a bonus until the end of training, 6 months or more. The delayed enlistment program will also bring Marines that enlisted in 1981 into 1982 and later bonus years. This problem is not usually seen in the technical skills because the basic qualifications are much higher. Percentages were not shown since the small number of recruits in the various MOSs inflate the numbers.

Table 17
Marine Corps Enlistment Bonus Program by
AFQT Category
(Percent of Category Who Took the Bonus)

MOS	1978				1979				1980			
	Cat I-II	III A	III B	IV	I-II	III A	III B	IV	I-II	III A	III B	IV
0311	41	31	12	9	30	22	19	20	24	19	27	23
0341	53	24	9	5	40	25	16	11	37	23	20	13

1981				1982			
I-II	III A	III B	IV	I-II	III A	III B	IV
24	21	30	21	33	25	31	11
39	23	22	11	44	23	21	9

4. Air Force Bonus Program. As a result of the extremely difficult recruiting climate of the late 1970's, the Air Force encountered its first recruiting shortfall since the beginning of the All Volunteer Force. Consequently, the Air Force began paying Enlistment Bonuses in March 1980 to three career fields. However, because of long training periods no payments were actually made until 1981. Two criteria were used to select these fields: insufficient first term accessions and high attrition rates during initial skill training. The Air Force currently pays an Enlistment Bonus of up to \$3,000 to qualified enlistees in 4 skills. Additionally, all Bonus recipients are enlisted into the 6-year enlistment program which has the benefits of higher rank and pay (E-3) upon completion of training. These benefits add additional attractiveness to the bonus program.

The following criteria apply for all non-prior service enlistees in all Air Force Specialty Codes (AFSC):

- a. Must be a high school graduate or equivalent.
- b. Be in AFQT Category Group I, II or III.
- c. Meet minimum entry requirements for specific field.
- d. Must enlist for at least 6 years.

The bonus is paid upon successful completion of all AFSC training, award to primary AFSC, and arrival at first permanent duty station. The Air Force is currently revising eligibility criteria to coincide with the requirements for the 6-year enlistment program. This will virtually restrict EB enlistments to High School Diploma Graduates and AFQT Categories IIIA and above.

Manning levels of the skills that have received an Enlistment Bonus in the Air Force are shown in Table 18. Since the EB program has only been in effect since March 1980 and there has been no previous experience with an EB program in the Air Force, no data exist to estimate its true impact. While inventories did increase and the Air Force met its recruiting requirements again in 1980, certain skills are still difficult to fill. The Air Force believes that the EB contributed to the recruiting success; however, rising civilian unemployment occurred almost simultaneously with the implementation of the bonus. Consequently, at this time, it is difficult to determine whether improvements are attributable to the EB, to the economy, or both. It should be noted, though, that for a small investment, two additional years were gained from each bonus recipient in skills that typically have an extended, costly, and/or dangerous training program. Since the Air Force program was not in full force in 1979, DoD survey sample sizes are small. However, 23 percent of enlistees would not have signed for the same AFSC or enlisted in the Air Force without a bonus (Appendix B).

Table 18
USAF Enlistment Bonus
AFSC Manning

		% Manned			
AFSC		FY79	FY80	FY81	FY82
202X0	Radio Comm Analysis	91	93* ¹	104	-
207X1	Morse Systems	89	95*	94	93
207X2	Printer Systems	101	107*	117	97
208XX	Crypto Systems	99	101*	103	109
275X0	Tactical Comd & Control	98	84	78*	85 ²
36140	Cable & Antenna Instl	98	86	85*	105 ²
464X0	Explosive Ordinance Disposal	99	105*	86	87
553X0	Engineering Asst.	93	80	92	98 ²

*Year bonus began

1. bonus discontinued Sep. 1980
2. bonus discontinued Sep. 1982

As with the other Services, to keep training attrition and costs to a minimum, the Air Force desires to obtain the highest quality recruit available. Because the Air Force has paid only 440 bonuses since their program began, breakdown of AFQT category by skill is not statistically significant. However, of the 440 bonus recipients, 73% were Category II or higher. No bonus enlistees were below AFQT Category III. Educational level data by skill were not available.

5. Quantity/Quality Overview. The Enlistment Bonus is a useful incentive for channeling quality enlistees into various skills, whether the skills be undermanned or have insufficient high quality people. We believe the EB, in conjunction with the total compensation and incentive package, to be successful in attracting personnel to the critical skills. Additionally, it is appropriate to use the Enlistment Bonus to attract only the highest quality people to the Services. Congressionally mandated quality standards emphasize the importance of a quality force. The Army, Marine Corps, and Air Force currently plan to restrict bonuses to AFQT Category I through IIIA, considered to be "above average" quality wise. These standards have assured a supply of high quality individuals in sufficient numbers. We do not believe it appropriate to pay lower quality categories the bonus, as is currently occurring in the Navy. In some Navy skills as many as 68% of the bonus enlistees were in AFQT Category IIIB or IV. We believe that better use of the Navy's bonus program can be made by eliminating AFQT Category IIIB (IIIL) and IV enlistees from bonus eligibility (as have the other Services) and increasing the bonus level, if necessary, to attract higher quality enlistees. The Congressionally established limit of \$8,000 should provide sufficient room for the Navy to adjust its bonus level upward from its present maximum of \$2,000, providing funding is available. However, at times it may be disadvantageous or uneconomical to limit a particular skill to higher categories since bonuses may be necessary in lower categories to meet accession goals during adverse recruiting conditions. Such use of the EB should be carefully monitored.

B. SKILL SELECTION CRITERIA. Are the criteria by which Enlistment Bonus skills are selected and eliminated appropriate? Each Service has its own procedures for determining the addition and deletion of Enlistment Bonus skills based on their particular needs. However, common to all is the underlying requirement to analyze quantity and quality shortfalls being experienced in various skills. The importance of a skill to the overall mission, the training time and cost are part of this evaluation. The timing of reviews ranges from quarterly in the Army to yearly in the Air Force.

With the help of their recruiting commands, the Services determine which skills are or will be undermanned or do not have the desired quality characteristics. These skills are associated with inadequate volunteer levels in jobs which have been unattractive or require long, expensive training. Manning levels of current bonus skills are also reviewed for any needed changes to bonus levels. The Services begin with lower levels of bonus payments and then periodically review them for increase, decrease, or termination of the award. For example, in the Navy, the Cryptologic Technician, Interpretive (CTI) rating initially received \$1,500 as an EB. The measured response indicated the award was insufficient to attract enough additional accessions to satisfy manning requirements. During the review of this bonus, the award was raised to \$2,000. Conversely, Sonar Technician (ST) accessions were responding sufficiently to the incentive of the technical training offered, so it

was determined that the bonus was no longer needed. Depending on quality mix, recruiting history, and manning projection, a Service can be justified in paying a bonus to a skill over 100% manned or reducing a bonus to skill under 100% manned.

Special attention is given to skills with high training investments and high school failure rates. The bonus award level is compared with the cost and impact of accessing a lower quality individual in the skill. Other factors, such as military pay raises, civilian salaries and benefits, the economy, and unemployment are considered, even though they are difficult to quantify.

We believe the Services' methods of selecting or eliminating Enlistment Bonus skills have proved appropriate to their needs. While each Service follows different procedures and places emphasis on different aspects of the bonus program, they have been effective in maintaining bonus plans that help improve the quality manning of critical skills. This review process has insured judicious use of the bonus throughout its history, as reflected in Table 19. While different skills will experience inventory changes based on a variety of factors, the review process is a flexible and responsive means of determining bonus applicability.

Table 19
Bonus Utilization
Non-prior Service % of Enlistees Who
Receive Enlistment Bonuses

<u>SERVICE</u>	<u>72</u>	<u>73</u>	<u>74</u>	<u>75</u>	<u>76+T</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>	<u>81</u>	<u>82</u>
ARMY	0.1	11	9	12	13	7	10	11	9	15	11
NAVY	-	-	-	0.3	0.2	-	-	1	3	4	3
MARINE CORPS	1	8	4	5	5	6	6	8	8	7	2
AIR FORCE	-	-	-	-	-	-	-	-	-	1	0.01
DoD	0.2	6	5	6	6	4	5	6	6	8	6

C. COST EFFECTIVENESS. Recent Army Research Institute and Center for Naval Analysis studies determined that people would enter the service in the bonus skills even if a bonus had not been available.¹⁴ Their findings have caused some to question the cost effectiveness of Enlistment Bonuses. While these studies are useful in determining the number of people involved, the same statements could be made about almost any element of the Military Compensation System - we must sometimes pay more to get the few extra we need. Moreover, such studies often fail to recognize the fallacies associated with certain questions. People are frequently reluctant to admit that they might have made a mistake and would have chosen something different. The same problem is present in any study of Enlistment Bonuses. It is, therefore, difficult to gauge civilian reactions.

As discussed previously, the Enlistment Bonus gives the Services high quality recruits for longer enlistment periods. In assessing cost effectiveness, one needs to examine the role of the bonus in the overall enlistment incentive program.

Bonuses have unique advantages over other incentives, the most important being flexibility. This flexibility enables bonuses to be adjusted to the changes in supply and demand for a targeted population. If other levels of compensation and enlistment incentives are adequate to supply recruits, then bonuses may be reduced or eliminated. On the other hand, if shortages of high quality enlistments exist, a bonus can be offered or increased.

As shown in the study of the Selective Reenlistment Bonus, lump-sum payments are the most effective, in terms of both cost and attractiveness. The Enlistment Bonus offers this lump-sum payment, which is valued more than a delayed benefit that may be received after satisfactory completion of an enlistment (e.g., educational benefits). Other payment plans, such as anniversary, would greatly reduce the attractiveness of the bonus.

In constant 1984 dollars, the Enlistment Bonus Program has not grown dramatically. Table 20 compares the cost of the EB program in current and constant 1984 dollars.¹⁵ The annual amounts are the total obligations for the new payments, assuming all are paid in lump sum.

Table 20
DoD Enlisted Bonus Program
Current \$ Compared to Constant 1984 \$ (millions)

<u>FY</u>	<u>Current \$</u>	<u>Constant 1984 \$</u>
1975	58.8	115.9
1976 & 7T	77.7	143.4
1977	31.9	56.0
1978	34.1	56.1
1979	42.6	64.0
1980	50.6	66.8
1981	71.6	84.6
1982	64.3	70.0
1983 Est.	75.8	79.6
1984 Proj.	86.9	86.9

Since Enlistment Bonus recipients historically have higher training completion rates and lower overall attrition, the average productive man-years available is greater when combined with the increased commitments. The avoidance of training costs alone is significant. For example, the Army estimates that an average 3-year enlistee is productive for 2 years (considering attrition, training etc.) and a 4-year enlistee for 3.2 years. This will vary by skill, of course. Table 21 is a cost-avoidance analysis using average costs. Figures may be higher or lower, depending on skill or Service.

Table 21
Enlistment Bonus Cost Avoidance - ARMY
(1980 Cohort Attrition)

	<u>W/O Bonus</u>	<u>With \$4,300 Avg. Bonus</u>
Avg. Cost of Training	\$12,696	\$ 12,696
Bonus	-	\$ 4,300
Est. Years on Job	2.0	3.2
Cost per Year	\$ 6,348	\$ 5,311

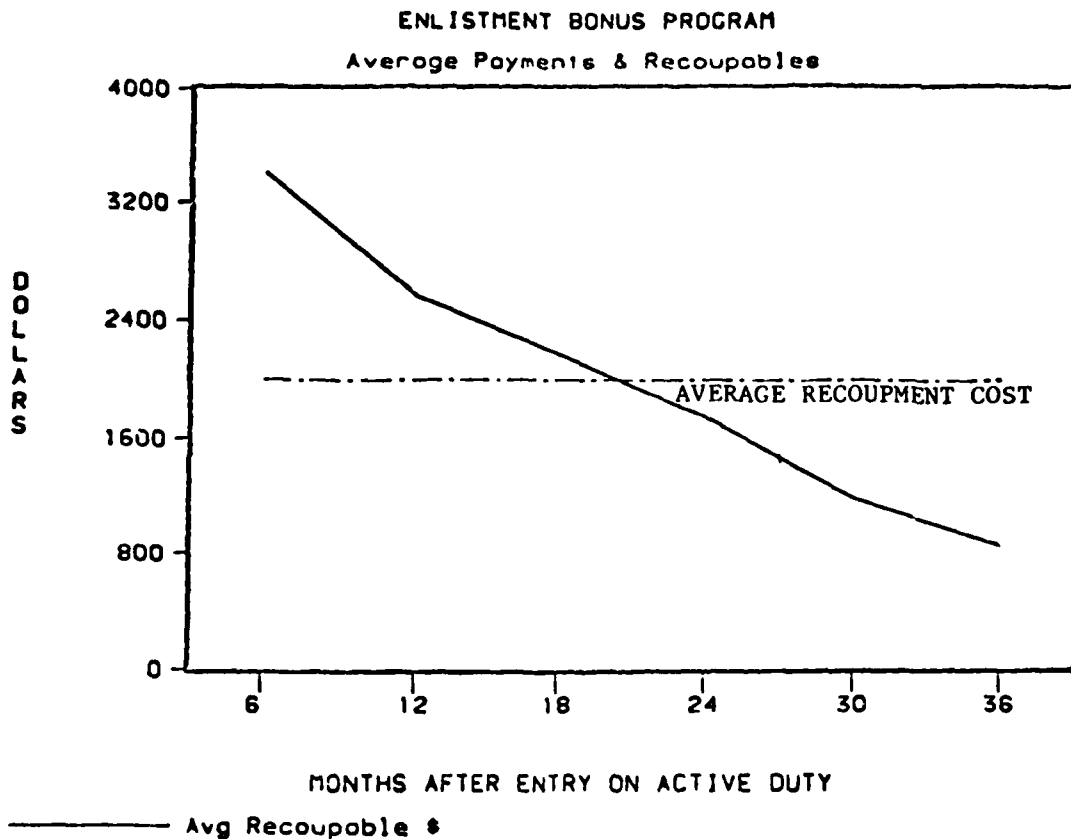
Avg Net Savings per Enlistee: \$3,318

Acquiring 1.2 extra manyears on average from a recruit will save about \$3,300 per Enlistment Bonus accession. If multiplied by the number of bonus recipients in 1980 (14,858), the Army avoided costs of \$49.0 million, on average, against a cost of \$39.7 million, a net of \$9.3 million, on average.

Using the average manyears for Army enlistees, we also determined that without a bonus, the Army would need to access approximately 9 thousand additional enlistees. The training costs alone of these personnel would have been over \$117 million, on average, more than twice the amount of the Army EB budget in 1982. Since bonus amounts are smaller and terms of enlistment longer in the other Services, their average cost avoidances could be even greater.

When dealing with bonuses, recoupment is an important consideration. On the average, the retrieval of only about 5% of Enlistment Bonuses is necessary. Of that amount, about 10% is actually recovered. An Enlistment Bonus is recoupable when the recipient voluntarily or because of misconduct fails to complete the enlistment for which the bonus was paid, or loses qualification in the bonus skill. Since an unearned bonus is not an indebtedness until after a member separates, there is sometimes limited or no pay due from which recoupment can be made. If funds are insufficient, collection procedures are started. However, cost of recovery may exceed the recoupable amount (Figure 2). The Service may decide that it is more advantageous dollar-wise not to seek recoupment. Furthermore, the Services are controlling this through their EB program policies and management programs which maximize bonus payback and minimize risk of unrealized service. These policies include low attrition risk personnel (HSDG, AFQT Category I, II, IIIA, except for Navy Category IIIB and IV bonus recipients), and payment of the bonus after training (40% of attrition occurs during training).

Figure 2



Currently, bonus levels are limited to \$8,000. Except for the Army Bonus test program, which pays bonuses up to this limit, special approval must be obtained for bonuses of over \$5,000 per DoD instructions. The Services, however, may set differing levels by skill or adjust their bonus payments during the year. We believe these bonus limits are appropriate, and they provide flexibility for the individual Services to adjust the Enlistment bonus to their needs.

D. ENLISTMENT BONUSES IN THE FUTURE. Is there a need for Enlistment Bonuses in the future? To man the shortage skills of the 1980's the Services will face a progressively austere recruiting market with the decline in the 17-21-year-old population growth and the apparently improving economy. In some skills, the Services will need incentives designed to attract both sufficient numbers and quality necessary to operate and maintain sophisticated weaponry and to provide the noncommissioned/petty officer base for the future. The assumption that incentives are not necessary during times of economic depression is not valid. More individuals may join the Services, but without some incentive attached

to a critical skill, quality individuals would most likely choose a skill where there are either fewer displeasures and a greater skill transferability to civilian occupations or not enlist at all.

We believe an Enlistment Bonus is necessary to meet the future accession needs of Services. Under new quality guidelines established by Congress, the Services are limited to the numbers of low quality personnel they can enlist. The Army particularly may have difficulties meeting these goals by 1985.¹⁶ In conjunction with increased recruiting efforts, compensation increases and other enlistment incentive packages, the bonus has played an important part in channeling quality personnel into critical skills. However, sustaining and improving the quality to meet accession goals and quality constraints in the future will remain a formidable challenge.

E. FOREIGN COUNTRIES. Both France and the United Kingdom pay recruits a bonus or extra payment for enlisting into the military.¹⁷ To encourage enlistment, France pays personnel who enlist for at least 3 years a higher base pay rate (amount not given). A lump sum of ff 6,000 (US \$ 828.00) is paid in the 13th month of Service, in three installments, or at the end of contract for a 5-year contract. A 10-year contract enlistee receives a lump sum of ff 15,000 (US \$ 2,070.00). The United Kingdom's pay differences based on the length of enlistment are referred to as "committal pay." Enlisted salaries will vary by several pence per day according to the length of the enlistment (terms and amounts not available). (US dollars as of April 4, 1983).

F. SUMMARY. Enlistment bonuses are used by the Services primarily to channel quality recruits into skills that are experiencing manning shortages. These skills include mostly combat arms skills, where perceived displeasures are associated with the job, and technical skills which have long and difficult training scenarios. These bonuses are targeted to personnel who are expected to have higher retention, fewer disciplinary problems, and who in the past have been exceptional performers. Improvements in manning are evident in all Services. However, it is not possible to separate the contributions of the bonus from those of additional factors such as pay increases, the rate of the economy, and other incentives, such as educational benefits. The Army, Air Force, and Marine Corps, in addition to quantity, control the bonus for quality enlistees by limiting bonus recruits to High School Diploma Graduates in AFQT Category I-IIIA. Consequently, they have seen improvement in the quality mix of critical skills. The Navy, however, does not limit bonus enlistees to any particular AFQT category, preferring to use skill requirements as qualifications. In some skills 68% of the bonus recipients in 1982 were in AFQT Categories IIIB and IV.

Each Service uses its own procedures for adding or deleting bonus skills based on their particular needs by conducting reviews that range

from quarterly to annually. During the reviews, special consideration is given to skills with high training investments and school failure rates. Both manning and quality factors are considered when reviewing skills, and periodic examinations have insured judicious use of the bonus in the Services. The Services' criteria are flexible and responsive means of determining bonus applicability.

Although studies have shown that Services may pay bonuses to some people who would have enlisted anyway, the bonus is a cost-effective means of attracting recruits to various skills. The most striking savings are in training and accession-related costs. For example, by increasing terms of enlistments through bonuses, the Army estimates that it has reduced its accession needs by about 9,000 personnel, with a cost avoidance of more than the total Army cost of the bonus program itself. Dollar losses from the bonus program were found to be minor, as only about 5% of Enlistment Bonuses need to be recouped.

The Enlistment Bonus program will be necessary to meet future accession needs of the Services. New quality guidelines, an apparently improving economy and a decline in the youth population will probably produce an austere recruiting market throughout the 1980's, and beyond. Without an incentive associated with skills that people find unattractive or to skills that have high training failures, quality individuals will most likely choose more attractive skills with greater transferability to the civilian world, or not enlist at all. The Enlistment Bonus is an important part of the incentive package to insure that quality individuals are attracted to the Services in critical skills.

VI. FINDINGS.

A. Enlistment bonuses are an appropriate managerial tool for channeling quality individuals into critically undermanned skills.

B. Use of the Enlistment Bonus is improving the mix of high quality recruits for the Army, Marine Corps and Air Force. These Services currently restrict recipients to AFQT Categories I-III A and High School Diploma Graduates or have plans to do so in the immediate future.

C. Enlistment Bonuses should not be extended to AFQT Categories IIIB or IV except when it would be disadvantageous or uneconomical to limit a particular skill to higher categories, or necessary to meet accession goals in a particular skill or under adverse recruiting conditions.

D. The criteria by which the Services add, change, or delete bonus skills are meeting their needs and are appropriate to maintaining a flexible and responsive program.

E. Enlistment Bonuses are cost-effective, as they may reduce accessions and their associated training costs.

F. Current Enlistment Bonus payment limits are appropriate and provide the necessary flexibility to adjust payment based on Service needs.

VII. RECOMMENDATION. Retain Enlistment Bonuses as a management tool to obtain quality personnel in critically undermanned skills.

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16. Op cit., MMTF p. II-7.
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Compensation Elements and Related Manpower Cost Items Their Purpose and Legislative Background, Military Compensation background papers, Second Revised Edition, Office of the Secretary of Defense, July 1982.

ENLISTMENT BONUS EXTENSION ACTS

Act of June 30, 1977
(Pub. L. No. 95-7)

Extended the Bonus from
June 30, 1977 to
September 30, 1978

Department of Defense
Appropriation Authorization Act
of 1979 (Pub. L. No. 95-485)

Extended Bonus from Sep-
tember 30, 1978 until
September 30, 1980

Department of Defense Authorization
Act of 1981 (Pub. L. No. 96-342)

Authorized bonuses from
September 30, 1980 to
to September 30, 1982.
Additionally increased
dollar limits to \$5,000.

Continuing Resolution (Pub. L. No.
92-276)

Extended bonus from
September 30, 1982 to
December 17, 1982

Continuing Resolution (Pub. L. No.
97-377)

Extended bonus from
December 17, 1982 to
March 31, 1983

Act of March 30, 1983
(Pub. L. No. 98-14)

Authorized bonus from
March 31, 1983 to
September 30, 1984

1979 DOD SURVEY OF PERSONNEL ENTERING MILITARY SERVICE

- Weighted Results of those who received an Enlistment Bonus
- Question: Suppose the job you signed up for did not pay a cash bonus. What would you have done?

- Responses:

	<u>ARMY</u>		<u>NAVY</u>		<u>USMC</u>		<u>USAF</u>	
Same Service, Same job	765	65%	109	76%	200	70%	33	73%
Same Service, Different job	302	26%	18	13%	58	21%	8	17%
Different Service	39	3%	7	5%	11	4%	1	2%
Not Enlisted	33	3%	8	6%	12	4%	1	2%
No Answer	31	3%	1	1%	6	2%	2	5%
	<u>1170</u>		<u>143</u>		<u>287</u>		<u>45</u>	

Results compiled by Defense Manpower Data Center. Percentages may not add to 100% due to rounding. Values are weighted.

SUMMARY OF RESPONSES

Enlistment Bonus

- Issues: 1. Enlistment bonuses are an appropriate managerial tool to channel quality individuals into critical skills.
2. The Enlistment Bonus is improving the mix of high quality recruits in those Services that restrict payment to AFQT Category I-III A personnel.
3. "Enlistment Bonuses should not be extended to AFQT Categories IIIB or IV except when it would be disadvantageous or uneconomical to limit a particular skill to higher categories, or necessary to meet accession goals in a particular skill or under adverse recruiting conditions."

SERVICE

COMMENTS

ARMY

Concurs.

NAVY

Concurs.

AIR FORCE

Concurs with findings except defers to views of the Navy on Issue 3.

COAST GUARD

Defers to QRM C Staff.

PHS

Defers to using Services.

NOAA

Defers to using Services

JCS

Concurs.

37 U.S.C. 312
SPECIAL PAY: NUCLEAR-QUALIFIED OFFICERS EXTENDING
PERIOD OF ACTIVE SERVICE

37 U.S.C. 312a
SPECIAL PAY: NUCLEAR-TRAINED AND QUALIFIED
ENLISTED MEMBERS

37 U.S.C. 312b
SPECIAL PAY: NUCLEAR CAREER ACCESSION BONUS

37 U.S.C. 312c
SPECIAL PAY: NUCLEAR CAREER ANNUAL INCENTIVE BONUS

**NUCLEAR OFFICER INCENTIVE PAYS
AND
NUCLEAR-TRAINED ENLISTED PAY**

**PRIMARY ANALYST
CAPT JACK J. MURPHY, USAF**

**ALTERNATE ANALYST
LCDR SHEILAH M. HUNTER, USN**

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NUCLEAR OFFICER INCENTIVE PAYS

I. PURPOSE. Title 37 U.S.C. 312 contains provisions for four specific Special Pays for Nuclear-Qualified Personnel:

- Continuation Pay for Nuclear-Qualified Officers (COPAY). The purpose of this pay is to induce naval officers, who are technically qualified for duty in connection with supervision, operation, and maintenance of naval nuclear propulsion plants, to agree to remain on active duty for a period of 4 years in addition to any other period of obligated active service.
- Nuclear Career Annual Incentive Bonus for Naval Officers (AIB). The primary purpose of this bonus is to improve retention of junior and middle-grade nuclear-qualified officers.
- Nuclear Career Accession Bonus. The purpose of this bonus is to induce naval officers and prospective naval officers to apply for nuclear power training for duty in connection with the supervision, operation, and maintenance of naval nuclear propulsion plants.
- Nuclear-Trained and Qualified Enlisted Members. The purpose of this pay was to provide an incentive to retain highly trained enlisted members who qualify for duty in connection with the supervision, operation, and maintenance of naval nuclear propulsion plants. Authority for this bonus expired on 30 June 1975. The reenlistment bonus program has served as its substitute.

II. DATA SOURCES. Data for this study were provided by the Navy, various government agencies and private industry. Data on retention, manning, and the administration of these special pays were furnished by the Navy. The Department of Energy provided some background information on nuclear power capacity in the U.S. The Nuclear Regulatory Commission made available salary data for their professionals and nuclear engineers. The Tennessee Valley Authority (TVA) was very cooperative in supplying information on career development and associated compensation/benefit levels for all occupations linked to nuclear energy. Oak Ridge Associated Universities provided data on starting salary offers for nuclear engineers graduating from all major engineering universities. The National Science (NSF) Foundation provided compensation data for engineers employed by utility companies.

In addition, the International Brotherhood of Electrical Workers (IBEW) was instrumental in clarifying the officer/enlisted role in the industry. They also provided detailed employment data for each reactor site, including compensation and some data regarding ex-Navy presence. The Institute for Nuclear Power Operations (INPO) furnished data on manpower projections for the industry. Various studies related to manpower and compensation for Navy nuclear-trained personnel were obtained from several sources including the Defense Technical Information Center and

the Center for Naval Analysis. Finally, extensive interviews with Nuclear Attack (SSN) and Fleet Ballistic Missile (SSBN) submarine crews were conducted at Charleston, SC; Norfolk, VA; Kings Bay, GA; and San Diego, CA.

III. HISTORICAL PERSPECTIVE. The nuclear officer community began in 1955 with the commissioning of the submarine USS Nautilus. Prior to 1961, only experienced, career-oriented members from other Naval Officer career paths were selected to fill positions in the newly formulated nuclear submarine officer community. By 1961, the Navy began sending newly commissioned officers directly to this community in an attempt to meet the officer requirements.

Since 1963 nearly all entrants have been from the various commissioning sources. Between FY63 and FY70 the nuclear submarine community was authorized 385 new officers per year, for a total of 3,080 new officers during that period. The Navy did not meet this goal. Although there were 5,516 applicants to fill these 3,080 requirements, only 2,675 (48%) were accepted into the program and of that, 2,112 (79%) successfully completed training [2]. The Navy had built its fleet of nuclear powered submarines to 41 SSBN (Polaris) submarines and 47 SSN (fast attack) submarines by 1969. It required 126 crews of 11 officers each, plus enlisted men, including the two crews required to man each SSBN. Thus, nearly 1,400 officers were needed to keep the submarines operational. The nuclear submarine officer community consisted of 1,950 trained officers and about 550 in training. Of these, approximately 100 were in the grade of Captain (O-6), who would not normally be assigned to such duties. Additionally, there were 4 nuclear powered surface ships in 1969 with an inventory of 358 officers, including nearly 100 senior officers or officers in training who would not normally fill billets at sea.

Because 1,850 nuclear submarine officers in grades below Captain were required to fill nearly 1,400 billets at sea, the shore duty opportunity was less than 5 years in a 20-year career, not including initial training. (The present approved career plan calls for 9 years of shore duty in the first 20 years of commissioned service.) Furthermore, the Navy retention rate was projected to fall below 40%.

On 3 June 1969, P.L. 91-20 was passed which authorized Special Continuation Pay of \$15,000 for nuclear-qualified submarine officers with less than 10 years of commissioned service who agreed to remain in active submarine service for 4 years in addition to any other period of obligated service. The bonus was payable in 4 annual installments of \$3,750. The objective of this pay (known as COPAY) was:

- To arrest and reverse a rapidly increasing rate of resignation by qualified nuclear submarine officers, thereby retaining sufficient qualified officer personnel to meet present and future manning requirements of the nuclear submarine force; and
- To maintain a sufficient officer force of qualified nuclear submarine officers to make possible a viable

sea-shore rotation, including appropriate and meaningful utilization of the postgraduate education program.[1]

The decline in retention during this period was not unique to the nuclear submarine officer community, but the impact was pronounced for several reasons. Groups entering prior to FY63 typically were lateral transfers with 2 or more years of active naval service and could be expected to have higher retention than subsequent year groups of newly commissioned officers, affecting retention rates in FY69 and beyond. Further, the minimum service obligation was reduced from 5 1/2 years for the FY63 year group to 4 years for immediately subsequent year groups, which may also have affected the rates. In hearings before the Senate Armed Services Committee in May 1969, Admiral Rickover recognized that these retention rates were higher than those of other communities in the Navy, but the relatively small size of the nuclear community made losses particularly acute.

In May 1972 the Navy submitted legislation to extend for 2 more years the authority to pay the Continuation Bonus. The 1969 law had an expiration date of 30 June 1973. Additionally, the proposal would extend the authority to surface nuclear officers, and a new paragraph in the law would pay similar bonuses to enlisted nuclear-trained personnel. The Enlisted Bonus was available to certain people at reenlistment time and could not exceed \$15,000 or 6 months' pay. Bonus amounts were in direct proportion to additional obligated service. This proposal became law on 27 October 1972 (P.L. 92-581) and had an expiration date of 30 June 1975.

The nuclear Navy was growing rapidly, and the Navy was interested in retaining all the experience possible to man the ships that were being commissioned. Moreover, authority under the Act of 27 October 1972 expired on 30 June 1975, and only anniversary payments were made. Appendix A contains data on the number of Nuclear Ships in commission from FY70 to FY88.

The Nuclear Career Incentive Act of 1975 (P.L. 94-356; 12 July 1976) reinstated the Continuation Bonus for officers and raised the amount from \$15,000 to \$20,000, with payments still made in annual installments. Furthermore, the law created two additional bonuses to enhance recruiting and retention beyond the capabilities of COPAY. First, a Nuclear Career Accession Bonus authorized payment of up to \$3,000 to officers with less than 5 years of commissioned service upon successful completion of training leading to duty in connection with the supervision, operation, and maintenance of naval nuclear propulsion plants. Second, an Annual Incentive Bonus (AIB) was available in lieu of COPAY for officers who did not want to commit themselves for 4 years of additional service. Instead of \$20,000 for a new 4-year commitment (\$5,000 per year), eligibles could receive \$4,000 at the end of the year with no specific obligated service commitment incurred. The amount paid was prorated if the officer was involuntarily ineligible for some fraction of the preceding year, but without an a priori service commitment. The only requirement

is that the eligible officers be on active duty at the end of the fiscal year. Officers receiving the lower AIB could choose later to accept a new 4-year commitment and the higher COPAY bonus provided they had less than 10 years of commissioned service and were otherwise still eligible. Individuals could not receive both forms of the bonus, for the same period of time. Only one COPAY agreement could be made, while AIB was available through 18 years of commissioned service (provided the officer did not have more than 3 consecutive years outside certain qualifying positions). After completion of a COPAY agreement, the officer could revert to the lower AIB, if still eligible. Between 18 and 25 years of commissioned service, officers could receive AIB for any fraction of a year in which they were in an assignment in an assignment directly involving nuclear duties. The accession bonus, COPAY, and AIB were all scheduled to expire on 30 September 1981 (except anniversary payments of COPAY).

The Military Pay and Allowances Benefits Act of 1980 (P.L. 96-579, 23 December 1980) extended the scheduled termination of COPAY, AIB, and the Accession Bonus to 30 September 1987 and increased the rates for each bonus. COPAY was increased from \$20,000 to \$28,000 for a 4-year agreement payable \$7,000 per year for persons accepting the agreement after completion of the initial service obligation. AIB was increased from \$4,000 to \$6,000 per year and, as before, would be payable from completion of the initial service obligation through 18 years of service except for periods covered by COPAY. There was no change to the conditions for payment beyond 18 years of commissioned service. Finally, the Accession Bonus was doubled from \$3,000 to \$6,000 and would be paid in two equal installments upon acceptance and upon completion of training. The number of people receiving each of the bonuses and their associated costs are shown in Table 1.

Table 1
Nuclear Bonus History FY74-FY82
(COST IN THOUSANDS)

FY	COPAY		NOIP		ACCESSION		ALL	
	Number	Cost	Number	Cost	Number	Cost	Number	Cost
74	422	1,409					422	1,409
75	403	1,338					403	1,330
76	363	1,214					363	1,214
TQ	92	304	958	3,590			1,050	3,894
77	224	740	1,387	4,316			1,611	5,056
78	89	278	1,771	5,484			1,860	5,762
79	11	33	1,936	6,680			1,947	6,713
80			2,185	7,220			2,185	7,220
81			2,351	10,530	578	1,722	2,929	12,252
82			2,373	12,155	734	2,202	3,107	14,357
83 (EST)			2,531	12,426	900	2,700	3,431	15,126
84 (EST)			2,698	13,089	900	2,700	3,598	15,789

*** COPAY column includes only those who signed obligated service contracts prior to implementing of the Nuclear Career Incentive Act of 1975. NOIP column includes people who received the Career Accession Bonus, AIB or COPAY under the Nuclear Career Incentive Act of 1975 (12 July 76). ACCESSION column are those who were eligible for the higher Accession Bonus authorized effective 1 January 1981.

IV. METHODOLOGY. There are three interrelated issues that affect the compensation needs for the group of officers eligible for these pays. They are:

- recruiting
- retention
- nature of the required duties.

To analyze the appropriateness of the compensation package available to these officers, it is necessary to examine the issues cited above, determine whether a problem exists that can be ameliorated through some form of compensation, then determine if the form in place is a cost-effective means to a solution.

Most of these officers are eligible to receive Submarine Duty Incentive Pay and Career Sea Pay - two pays nominally intended to address the nature of the required duties. Surface nuclear-qualified officers constitute approximately 18% of all nuclear Navy officers and are eligible for Sea Pay but not Submarine Pay. Nuclear Officer Pays are made to those with unique qualifications or in pursuit of those qualifications. They must, therefore, be evaluated based on the nature of duties unique to officers with these qualifications and the availability of employment outside the Navy. Submarine Duty and/or Career Sea Pay are not unique to these officers, and other special pays are designed as compensation for these conditions of service. However, if the qualifications they possess require that they spend more time at sea or assigned to a submarine than general submarine or surface officers without nuclear qualifications, then the Nuclear Pays may appropriately serve as a premium for the longer expected time in such duties. This hypothesis will be examined as well as its relationship to the Premium Career Sea Pay. The Navy has suggested that officers with these qualifications incur greater responsibility and longer duty hours than their counterparts on the submarine or carrier without the qualifications. If this is so, it has not been measured empirically. Thus, the only indirect indicator of this may be retention, which is itself dependent on many other factors as well. This study addresses each of the issues just described to determine the appropriateness of the special pays for nuclear qualification.

Because the interactions between those special pays that may be received by nuclear-qualified officers are very complex, the analysis that follows is organized according to the individual issues affecting compensation rather than according to a specific type of special pay. As the special pays are associated with these issues, the relationships will be explained and quantified when appropriate. The issues to be addressed are:

- Prospects and competition in the nuclear power industry.
- Compensation in civilian nuclear power industry.
- Nuclear Navy manning.
- Nuclear Navy retention, recruiting, and pay.
- Alternative bonuses for nuclear-qualified officers.

V. ANALYSIS.

A. NUCLEAR INDUSTRY. Because of the extensive training provided to Navy nuclear personnel and the limited source of nuclear-qualified persons outside the military, the draw to the private and public sectors is an extremely important factor when analyzing the effectiveness of the Nuclear Pays. In the United States there are now 83 commercial operating nuclear reactors, with another 58 in various stages of construction. Some are just short of receiving an operating license from the Nuclear Regulatory Commission, while others are still in the site preparation phase. The power production from all these plants will grow from about 71 gigawatts (71 billion watts) in 1982 to nearly 128 gigawatts by 1991 as a result of the scheduled completion of new reactors. However, enthusiasm for nuclear energy of the past has been affected dramatically by the incident at Three Mile Island (TMI) on 27 March 1979 and the soaring capital investment and risk required to construct, license, operate and maintain a nuclear reactor. Of the 58 under construction, many (perhaps 10 or more) have been indefinitely postponed or cancelled. Furthermore, there have been no new orders for reactors since 1978, when the last 2 orders were made. The U.S. is now in a period of both growth and decline of the nuclear power industry. Manpower projections through 1991 are possible given scheduled plant completions, but unless new orders are placed soon, there may be no growth in the 1990's.

Little and Johnson [4] compiled comprehensive statistics regarding current and projected manpower requirements. In 1982 the industry reported 6,521 vacancies out of 56,049 positions in all occupations directly associated with operations of a nuclear reactor, including "off-site" positions which provide supporting and technical assistance in nuclear related areas. In aggregate, the vacancy rate was 11.6%. The number of positions reported in 1982 was 5% higher than that reported in 1981. However, the off-site positions, which include over 60% of the engineering and scientific positions, decreased by 13%, while on-site positions, which are dominated by reactor operations (RO), technicians and maintenance personnel, increased by 13%. Table 2 shows positions and vacancies by occupational categories.

Little and Johnson also found that the industry-wide turnover rates for 1980 and 1981 were comparable (the 1981 rate was 12.7 percent). Thirty-seven percent of the turnover rate in 1981 resulted because the employee accepted another nuclear-related job within the same company. However, 5.4 percent of the employees actually exited the industry in both years.

Table 2
Summary of On-Site and Off-Site Nuclear-Related Job
Vacancies in Occupational Groups at INPO Member Utilities,
March 1, 1982

Occupations	Positions*	Vacancies	
		Number	Percent of Total
Managers and Supervisors	5,765	432	7.5
Engineers			
Chemical	179	30	16.8
Civil	872	40	4.6
Electrical	1,514	239	15.7
Instrument and Control	506	91	18.0
Mechanical	2,444	327	11.6
Nuclear and Reactor	1,427	287	20.1
Quality Assurance/Control	791	147	18.6
Radiation Protection	140	30	21.4
All Other Engineers	2,229	420	18.8
Total Engineers	10,506	1,611	15.3
Scientists			
Biologists	144	6	4.2
Chemists	269	37	13.8
Health Physicists	404	83	20.5
Other Scientists	235	28	11.9
Total Scientists	1,052	154	14.6
Training Personnel			
SRO/RO Licensed/Certified Instruc.	405	109	26.9
Other Tech./Scientific Instructors	576	100	17.4
Other Instructors	188	52	27.7
Support Staff	135	17	12.6
Total Training Personnel	1,304	278	21.3
Operators			
Shift Technical Advisors	416	93	22.4
Shift Supervisors	735	119	16.2
Senior Licensed Operators (SRO)	385	117	30.4
Individuals in Training for SRO			
Licenses	495	22	4.4
Licensed Operators (RO)	1,094	230	21.0
Individuals in Training for RO			
Licenses	878	66	7.5
Non-Licensed Operators Assigned to Shift	2,286	242	10.6
Individuals in Training for Non-Licensed Positions	838	246	29.4
Other Non-Licensed Operators	351	102	29.1
Total Operators	7,478	1,237	16.6
Technical and Maintenance Personnel			
Chemistry Technicians	1,004	161	16.0
Draftsmen	1,209	98	8.1
Electricians	1,609	172	10.7
Instrument and Control Technicians	2,483	320	13.0
Mechanics	3,554	244	6.9
Quality Assurance/Control Technicians	793	88	11.1
Radiation Protection Technicians	1,792	266	14.8
Welders with Nuclear Certification	415	48	11.6
Other Technical and Maintenance Personnel	3,883	312	8.0
Total Technical and Maintenance Personnel	16,742	1,709	10.2
All Other Professional Workers	1,304	125	9.6
Other Technical Personnel	1,061	114	10.7
All Other Workers	10,837	861	8.0
Total	56,049	6,521	11.6
Adjusted Totals*	56,898	6,623	11.6

Source: Descriptive Statistic of Occupational Employment in Nuclear Power Utilities.[4]

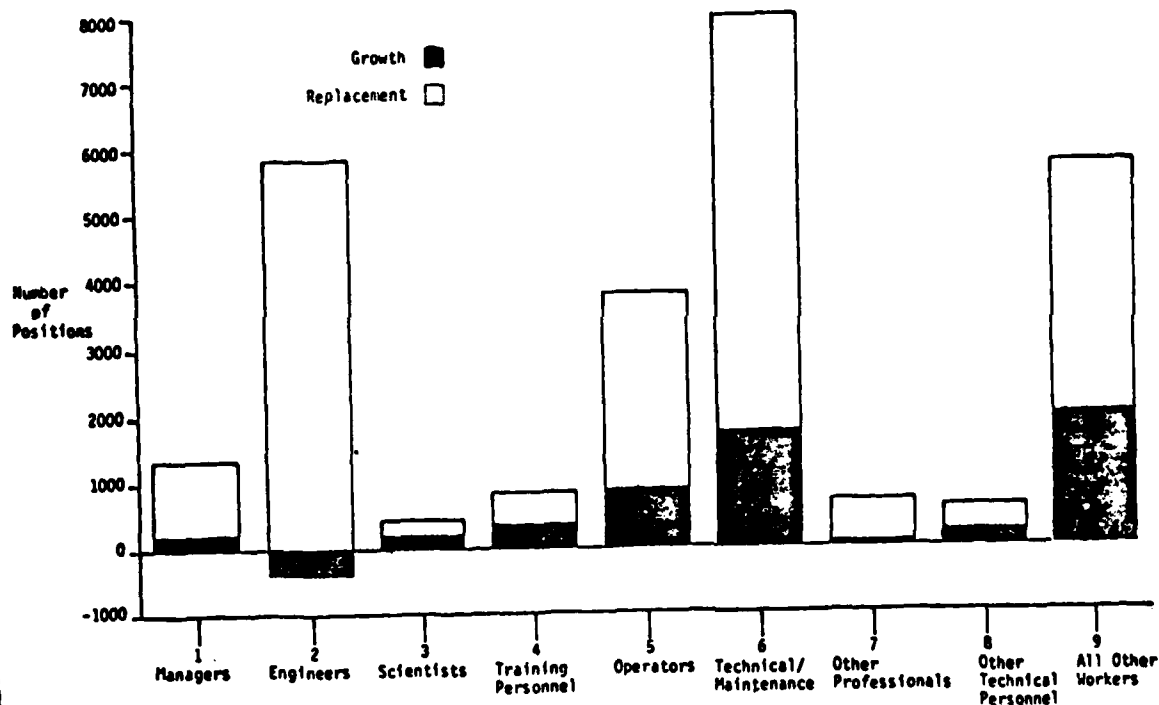
Table 3
Summary of On-Site and Off-Site Utility Staff Turnover
in Occupations within the Nuclear Power Utilities Industry, 1981

Occupations	Positions Vacated During 1981	Employee Accepted Another Nuclear- Related Job Within Utility		Employee Accepted Nuclear- Related Job at Another Utility		Employee Accepted Nuclear- Related Job with a Non- Utility Firm		Employee Accepted Non- Nuclear- Related Job		Retire- ment or Death		All Other Reasons or Unknown	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Managers and Supervisors	363	182	50.1	49	13.5	33	9.1	41	11.3	19	5.2	39	10.7
Engineers													
Chemical	14	1	7.1	6	42.9	2	14.3	2	14.3	1	7.1	2	14.3
Civil	110	47	42.7	8	7.3	12	10.9	6	5.5	0	0.0	37	33.6
Electrical	130	60	46.2	17	13.1	9	6.9	16	12.3	4	3.1	24	18.5
Instrument and Control	58	18	31.0	5	8.6	16	27.6	10	17.2	1	1.7	8	13.8
Mechanical	309	89	29.8	40	12.9	35	11.3	15	4.9	4	1.3	126	40.8
Nuclear and Reactor	167	58	34.7	28	16.8	32	19.2	12	7.2	1	0.6	36	21.6
Quality Assurance/Control	76	24	31.6	12	15.8	12	15.8	9	11.8	6	7.9	13	17.1
Radiation Protection	10	2	20.0	3	30.0	0	0.0	3	30.0	0	0.0	2	20.0
All Other Engineers	166	78	47.0	22	13.6	12	7.2	24	14.5	1	0.6	29	17.5
Total Engineers	1,040	377	36.3	141	13.6	130	12.5	97	9.3	18	1.7	277	26.6
Scientists													
Biologists	2	1	50.0	0	0.0	0	0.0	0	0.0	0	0.0	1	50.0
Chemists	22	8	36.4	3	13.6	2	9.1	2	9.1	0	0.0	7	31.8
Health Physicists	35	8	22.9	9	25.7	6	17.1	2	5.7	1	2.9	9	25.7
Other Scientists	11	4	36.4	0	0.0	0	0.0	3	27.3	0	0.0	4	36.4
Total Scientists	70	21	30.0	12	17.1	8	11.4	7	10.0	1	1.4	21	30.0
Training Personnel													
SRO/RO Licensed/Certified Instruc.	33	9	27.3	7	21.2	14	42.4	1	3.0	0	0.0	2	6.1
Other Tech./Scientific Instructors	42	17	40.1	4	9.5	6	14.3	5	11.9	3	7.1	7	16.7
Other Instructors	15	3	20.0	1	6.7	1	6.7	2	13.3	0	0.0	8	53.3
Support Staff	7	0	0.0	1	14.3	0	0.0	1	14.3	0	0.0	5	71.4
Total Training Personnel	97	29	29.9	13	13.4	21	21.6	9	9.3	3	3.1	22	22.7
Operators													
Shift Technical Advisors	34	7	20.6	11	32.4	8	23.5	2	5.9	0	0.0	6	17.6
Shift Supervisors	55	17	30.9	10	18.2	8	14.5	5	9.1	3	5.5	12	21.8
Senior Licensed Operators (SRO)	58	24	41.4	11	19.0	11	19.0	2	3.4	0	0.0	10	17.2
Individuals in Training for SRO													
Licenses	53	40	75.5	1	1.9	7	13.2	2	3.8	1	1.9	2	3.8
Licensed Operators (RO)	108	29	26.9	32	29.6	15	13.9	11	10.2	1	0.9	20	18.5
Individuals in Training for RO													
Licenses	68	32	47.1	4	5.9	6	8.8	4	5.9	0	0.0	22	32.4
Non-Licensed Operators Assigned to Shift	256	91	35.5	51	19.9	7	2.7	47	18.4	3	1.2	57	22.3
Individuals in Training for Non-Licensed Positions	120	19	15.8	5	4.2	2	1.7	8	6.7	0	0.0	86	71.7
Other Non-Licensed Operators	51	36	70.6	4	7.8	0	0.0	6	11.8	0	0.0	5	9.8
Total Operators	803	295	36.7	129	16.1	64	8.0	87	10.8	8	1.0	220	27.4
Technical and Maintenance Personnel													
Chemistry Technicians	109	25	22.9	19	17.4	22	20.2	9	8.3	2	1.8	32	29.4
Draftsmen	122	30	24.6	8	6.6	18	14.8	25	20.5	12	9.8	29	23.8
Electricians	142	59	41.5	9	6.3	11	7.7	36	25.4	4	2.8	23	16.2
Instrument and Control Technicians	264	71	26.9	28	10.6	35	13.3	44	16.7	2	0.8	84	31.8
Mechanics	238	94	39.5	9	3.8	6	2.5	57	23.9	8	3.4	64	26.9
Quality Assurance/Control Technicians	80	38	47.5	9	11.3	11	13.8	9	11.3	0	0.0	13	16.3
Radiation Protection Technicians	197	58	29.4	38	19.3	42	21.3	7	3.6	2	1.0	50	25.4
Welders with Nuclear Certification	26	6	23.1	3	11.5	2	7.7	5	19.2	0	0.0	10	38.5
Other Technical and Maintenance Personnel	198	86	43.4	8	4.0	11	5.6	37	18.7	2	1.0	54	27.3
Total Technical and Maintenance Personnel	1,376	467	33.9	131	9.5	158	11.5	229	16.6	32	2.3	359	26.1
All Other Professional Workers	93	43	46.2	2	2.2	5	5.4	18	19.4	3	3.2	22	23.7
Other Technical Personnel	71	13	18.3	5	7.0	5	7.0	26	36.6	1	1.4	21	29.6
Total	3,913	1,427	36.5	482	12.3	424	10.8	514	13.1	85	2.2	981	25.1

NOTE: All on-site information reported by 80 of 83 plants representing 57 of 58 utilities. Off-site data represent 52 of 58 utilities for training and technical and maintenance personnel, while 53 of 58 utilities supplied information for all other categories. All positions reported as Full-Time Equivalents (FTEs).

Little and Johnson also projected manpower growth in employment based on planned increases in generating capacity and typical plant staffing. They assumed that growth in employment would precede increases in generating capacity by two years, on the average. On the basis of their analysis, they project growth and replacement as shown in Figure 1. The figure shows a significant requirement for replacement of technical/maintenance personnel and engineers, but it also reflects a net negative growth (-395) of engineering positions. In fact, the two engineering disciplines in the industry, mechanical and electrical, show a combined negative growth of -687 positions. This negative growth is offset by positive growth of 608 positions requiring nuclear and reactor engineering degrees or quality assurance/control expertise. If planned increases in generating capability continue to be delayed or cancelled, one might expect slower growth, but replacement needs will be roughly similar.

Figure 1
Occupational Growth and Replacement Needs
in the Nuclear Power Industry, 1983-1991



Source: Descriptive Statistics of Occupational
Employment in Nuclear Power Utilities.[4].

Several observations can also be made with respect to the Navy personnel implications of these projections. There is a shortage of nuclear-trained personnel in the utilities of a magnitude not unlike

that in the Navy. However, the shift of positions from "Off-site" to "On-site" (a 13% increase in on-site, and a 13% reduction in off-site) that occurred in 1982 is an indication that there may be more opportunities for Navy enlisted personnel, but fewer opportunities for officers than in the past. Throughout the industry, on-site positions are typically filled by personnel with less than four years of college. Such positions include reactor operators (RO), licensed reactor operators (LRO) and senior licensed reactor operators (SRO), among others. The Florida Power and Light Company has a large operations staff, but is typical in terms of the academic background of its operators, shown in Table 4 below.

Table 4
Formal Education of Operations Personnel
at 2 Stations of Florida Power and Light Company

<u>Positions*</u>	<u>High School</u>	<u>Some College</u>	<u>Baccalaureate</u>	<u>Masters</u>
Nuclear Operations Career Path (In training)	16	22	10	1
Reactor Control Operator (RO)	7	16	3	2
Senior Reactor Control Operations (SRO)	4	3	0	0
Nuclear Watch Engineer (SRO)	<u>10</u>	<u>3</u>	<u>2</u>	<u>0</u>
Total operations	37	44	15	3

*Except for the Nuclear Operation Career Path, all hold NRC licenses.

The data indicate that 81% of the operator positions are filled by non-college graduates. These are not professional or management positions that an ex-Naval officer would likely enter and remain in for a career with the utility company. Instead, ex-officers would likely go directly to management positions or spend only a few years in this path while they obtain a reactor operator license or senior reactor operator license. In some utility companies employers pay a premium for possession of an NRC license to professional and management personnel as well as operators. Furthermore, many employers prefer to have management and professional personnel with experience in reactors operations.

The following two tables demonstrate the extent to which the Navy contributes to the manpower of nuclear utilities. These data were obtained from surveys conducted just prior to the incident at TMI. No

systematic survey has been conducted since then to assess the Navy contribution to the Nuclear utilities. However, Iowa Electric Light and Power Company reported that in 1983, 11 of 15 licensed operators and 3 of 8 senior licensed operators were ex-Navy. (For the 12 persons in training, the number of ex-Navy was unavailable.)

Table 5
Previous Nuclear Work Experience by Age of Power Station

<u>Year of Initial Criticality</u>	<u>Percent of Workers with Previous Nuclear Work Experience</u>		
	<u>Any Nuclear Work Experience</u>	<u>Nuclear Navy</u>	<u>Other Than Nuclear Navy</u>
1967-1970	46%	37%	9%
1973-1976	29	23	6
1977-1980	20	11	9

Numbers under each type of work experience are the percentages of the work force at power stations with initial criticality during the years listed in the left hand columns.

Table 6
Previous Work Experience by Job Group

<u>Job Group</u>	<u>Percent of Job Group Reporting Previous Work Experience</u>		
	<u>Nuclear Navy</u>	<u>Nuclear Other Than Navy</u>	<u>Nonnuclear Power Plant</u>
<u>Operations</u>			
Licensed	45%	12%	54%
Unlicensed	26	8	36
Maintenance electricians and mechanics	7	16	57
Instrument and control	17	11	33
Health physics technician	21	16	29
Maintenance--nonstandard storekeeper, administrative clerk	3	10	27

NOTE: Data represent the number of workers reporting the specific type of related work experience as a percentage of total employment in that job classification. Data in last column include work experience in another nuclear power station, in a U.S. Department of Energy (previously U.S. Energy Research and Development Administration and U.S. Atomic Energy Commission) facility, in private industry, or other.

In this company, 60% of licensed operators had previous work experience in the nuclear Navy compared with the 45% national average reported prior to the incident at TMI. In 1983 another company, the Washington Public Power Supply System, had 22 people in training for an operators license; 16 were ex-Navy. None were officers, but most had 8 to 11 years' military service. It is not known whether Iowa Electric is typical but labor leaders at the International Brotherhood of Electric Workers (IBEW) believe that the incident at TMI created a greater demand for experience (obtainable from the Navy) but no greater demand for numbers. They also stated that the trend shown in Table 7 was the result of an expanding industry that was forced to hire from sources other than the Navy to meet their manpower needs, but the slowdown of the growth in the industry and the increased demand for experience have combined to stop the downward trend in the use of Navy personnel that was occurring in the 1970's. Figure 1 shows a need to replace about 3,800 reactor operators and new growth of about 900 reactor operator positions. In total, there will be 4,700 openings for operators positions to be filled between 1983 and 1991, or about 525 openings per year.

Since it is more likely that members of the officer corps would pursue management/professional or engineering positions with the utilities rather than positions as reactor operators, an examination of job openings in these categories is warranted. For management and supervisory positions the vacancy rate in 1982 was the lowest of any occupational category involved in nuclear power generation, as shown in Table 4. Of the management positions, 7.5% were vacated, while overall 11.6% of nuclear-related positions were vacated. Management and supervisory positions encompass 10% of the nuclear-related positions. Figure 1 shows the need to replace about 1,350 managers and supervisors and new growth of about 220 positions from 1983 to 1991, or about 174 openings per year.

Engineering positions numbering 10,506 account for almost 19% of the nuclear-related positions with utility companies. As illustrated in Figure 1, there will be a requirement to replace more than half (5,800) of the engineers, but there will be a net reduction in requirements of nearly 400 from 1983 to 1991. Table 7 shows that there is significant variation in growth by engineering discipline.

Table 7
Nuclear Industry Change
(Engineering Positions)

<u>Type of Engineer</u>	<u>Change in # of Positions*</u>
Civil Engineering	-39%
Mechanical Engineering	-17%
Electrical Engineering	-12%
Instrumentation & Control	+15%
Nuclear Reactor Engineer	+23%
Quality Assurance/Control	+34%

*Increase is new growth only. It does not include replacement of employees.

The analysis above relies heavily on the work done by Little and Johnson of Oak Ridge Associated Universities. The data were obtained from a Spring 1982 survey conducted by the Institute of Nuclear Power Operations (INPO). All commercial nuclear utility companies are members of INPO, and only one plant responded too late to be included in the summary statistics. Thus, there is no data base more comprehensive, complete or current from which manpower projections can be made.

It is also recognized that not all nuclear-related jobs are with the utility companies. Westinghouse, General Electric, Babcock & Wilcox, and Combustion Engineering are manufacturers of nuclear reactors. Service and spinoff industries support the utility companies and other industries using nuclear energy. Government agencies compete with these employers for qualified manpower. Among the government agencies outside DoD, the Nuclear Regulatory Commission has the greatest demand for personnel academically qualified in nuclear or nuclear-related disciplines. However, no attempt was made to quantify the manpower needs of all these employers.

B. CIVILIAN PAY. To determine the current compensation available to civilians working in the nuclear field, data were obtained from many different sources, as indicated in Section II. The Nuclear Regulatory Commission (NRC) pays members of their Engineering Group and their Resident Inspectors on a scale different from the civil service pay tables. The Tennessee Valley Authority (TVA) provided a comprehensive package describing wages, salaries, and benefits, including retirement benefits for people employed at their Nuclear Power Plants. For new graduates with degrees related to nuclear power, data were obtained from two surveys: one from the College Placement Council and the other from a June 1983 survey done by Oak Ridge Associated University (ORAU) for NRC to support NRCs recruiting effort. Their survey was targeted only at schools offering nuclear energy degrees. Finally, data was obtained from the International Brotherhood of Electric Workers (IBEW) Union that contained detailed compensation information for each nuclear utility company having union representation in the nuclear power plants.

After review of the available data, it was determined that the best model for comparison with compensation in the military was the pay system of the Tennessee Valley Authority (TVA). The compensation provided to their employees in nuclear power is quite competitive with investor-owned, cooperative, or municipal utility companies for like work or responsibility. A comparison of their salaries reveals no significant departures from NRC salaries of engineers and resident inspectors nor from the IBEW data. It was also chosen because of the clearly identifiable career progressions and associated salary data. Figure 2 shows TVA plant organization and associated compensation.

Figure 2
Nuclear Plant Staff
TVA 1983

PLANT ORGANIZATION	LEVEL	SALARY RANGE	MEAN
<div> <div>PLANT MANAGER M-8</div> <div> <div>ASST PLANT MGR M-6</div> <div>ASST PLANT MGR M-6</div> <div>ASST PLANT MGR, HEALTH SAFETY SVCS M-5</div> <div> <div>MAINT SUPTS M-5</div> <div>MECH</div> <div>ELEC</div> <div>INST</div> </div> <div> <div>ENGG SUPT M-5</div> <div>ASST SUPT M-4</div> <div>SECTION SUPVS M-4</div> <div>CHEM</div> <div>TEST</div> <div>REACTOR</div> </div> <div> <div>OPNS SUPT M-5</div> <div>OPNS SUPVS M-4</div> <div>SHIFT ENGRS M-4</div> <div>ASST SHIFT ENGRS M-3</div> </div> </div> </div>	MANAGEMENTS	53,000 - 60,500	-
		44,960 - 48,614	48,198
		41,180 - 46,773	44,990
		29,800 - 42,288	40,224
		25,750 - 34,962	32,871
SHIFT TECH ADVISOR SC-4	PROFESSIONAL	29,675 - 42,400	-
UNIT OPERATOR	LABOR	30,010 including RO premium	-
ASST UNIT OPERATOR		23,475	

NOTE: Professional and Management salaries do not include special bonuses for qualifying individuals.

Using the TVA data, for example, an ex-Naval officer (Lieutenant with 5-6 years military service) might start as a unit operator while he obtains an NRC license and qualification on the plant at his place of employment. This is considered by the utilities to be a labor position, while a position as assistant shift engineer would be a management position. For a former Navy officer, this is likely to be treated as a training ground with a relatively quick (< 2 years) promotion to assistant shift engineer (2 of 4 shift engineers at one of the reactors in TVA were ex-Navy officers). He would be paid on the low end of the M-3 scale during this period. After successfully obtaining an NRC license, he would receive an annual premium of \$3,800 in addition to the normal pay for his salary grade. Upon completion of about 2 additional years, the premium would rise to \$4,680 if he obtained a senior reactor operators license.

The range of salaries shown for each management grade is dependent on performance, not position or tenure at TVA. It takes approximately 3 years to advance to shift engineer and another 2 to 3 years to operating supervisor. Further advancement depends on job openings. Operations supervisors and above typically receive the \$4,680 bonus for license maintenance, but a management incentive bonus ranging from \$1,500 for grade M5 to \$2,500 for M8 is paid annually to managers without an NRC license if they are in a position of major accountability for nuclear safety and adherence to regulatory requirements. This pay is virtually a retention incentive for continuous service and is paid nearly the same way AIB is paid to Navy personnel.

A review of the commercial nuclear power plants revealed that at least 2 other utility companies use similar retention bonuses. Duquesne pays \$12,000 for each 3 years of consecutive service for employees that maintain their NRC licenses. The bonus is paid every 3 years if still employed by the company. Portland General Electric pays \$10,000 for each 5 years of consecutive service payable at the completion of every 5 years if still employed. In both these companies, the tenure premium is in addition to an annual license premium, whereas TVA personnel may not receive both.

A career in plant operations management is not the only path available to Naval officers. Figure 2 also shows a professional track. This track includes positions in the Maintenance and Engineering Department of the reactor facility. In particular, these positions are in the Reactor Engineering Branch and the Quality Assurance Branch. The track also includes a large number of positions at the utility headquarters for electrical, mechanical, and nuclear engineers as well as computer and other technical/scientific personnel.

Table 8 shows the 1983 annual salary scale for engineering and scientific personnel. All personnel on the scale (SC) must possess a bachelor's degree in an engineering or scientific discipline. New employees with degrees in nuclear engineering begin at SC1 step 8, or \$26,775 annual salary. New employees with mechanical engineering degrees begin

at step 7, or \$24,950 annually. A shift technical advisor would begin at SC4 step 1, or \$29,675 annually.

Table 8
Engineering/Scientific Schedule

Tenure Step	Professional Pay Category			
	SC1	SC2	SC3	SC4
1	14,000	19,685	25,165	29,675
2	15,825	21,760	27,130	32,060
3	17,650	23,835	29,100	34,445
4	19,475	25,220	30,410	36,040
5	21,300	26,600	31,720	37,630
6	23,125	27,985	33,035	39,220
7	24,950	29,365	34,345	40,810
8	26,775	30,750	35,655	42,400

NOTE: New hires may start anywhere on the table.
Advancement in tenure step requires 1 year in present step. Advancement to next higher pay category depends on performance, tenure, and availability of a position.

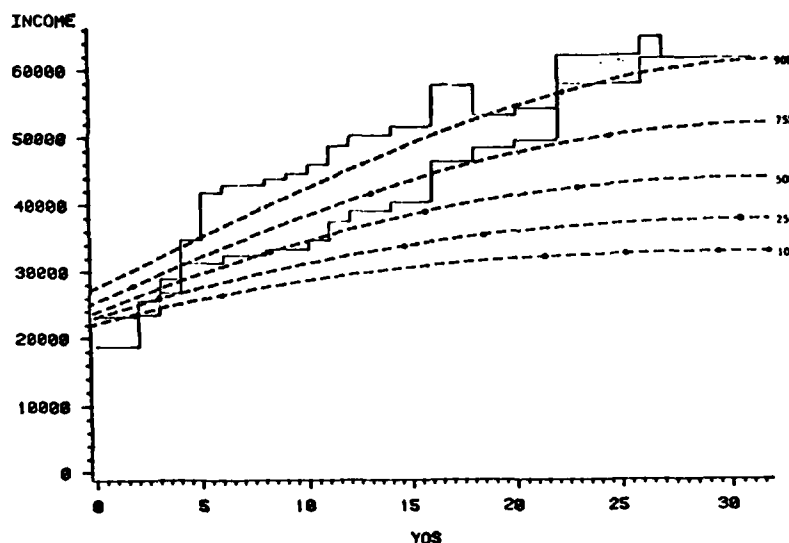
A master's degree or equivalent work experience in a needed academic specialty would qualify an individual for pay on the SC2 level or \$19,685 to \$30,750 annually, depending on qualifications. The SC3 level is paid to engineers and scientists qualified to work alone and assist junior engineers with technical problems. Individuals paid at SC4 are technical experts in their field and project leaders. At this point they would be promoted into management positions (M1 and up) and be administratively responsible for subordinates. Their pay would be in the range of M4 or M5. SC4 is roughly equivalent to M4. Reactor engineering jobs and quality assurance jobs would typically fall along the progression just described. This progression is similar to many off-site positions of the utility headquarters.

Analysis of other salary and benefits data do nothing to disclaim the competitiveness of TVA. Appendix B contains the NRC pay schedule. An examination of these rates shows that NRC annual pay is consistent with TVA rates. Starting salaries for new graduates with BS degrees in nuclear disciplines show that the TVA scientific and engineering scale is very close at the entry level to data obtained by both surveys. Results of these surveys are also contained in Appendix B. Finally, to estimate the advancement in salary as one grows in experience and responsibility, data were obtained from a survey conducted by the Engineering Manpower Commission, American Association of Engineering Societies [5]. At least 14 of the 48 utility companies that participated in the survey have operating nuclear reactors. These data are displayed in Figure 3 below along with the military paylines.

The graph shows that Regular Military Compensation (RMC) between about 4 and 16 years of service is close to the median salary of engineers employed by utility companies. Before 4 years of service RMC is considerably less than the 10th percentile of similarly qualified civilians. After 16 years of service military RMC advances to the 75th percentile, and beyond 22 years, advances further. When the nuclear bonuses and Submarine Pay are added to RMC, some changes result. First, the Accession Bonus and Submarine Pay in the first two years of service provide competitive starting salaries. Second, the bonuses available upon completion of initial service obligation (4 to 5 years of service normally) combined with RMC and Submarine Pay for 0-3's put total compensation well above the 90th percentile of civilian engineers employed by utility companies. This situation lasts until about 18 years of service when the nuclear pay stops for many officers; this reduction is clearly depicted on the graph. The rise and drop in pay at 26 years of service will occur only for officers still drawing Submarine Pay at the time of the pay increase for going over 26 years' service. For most officers that pay increase will be offset by elimination of Submarine Pay (except for officers still performing operational submarine duty) upon completion of 26 years of service. Neither military pay stream shown on the graph includes Sea Pay, which will add \$1,800 to \$4,920 per year for performance of sea duty.

Figure 3

NUCLEAR RMC OCT82



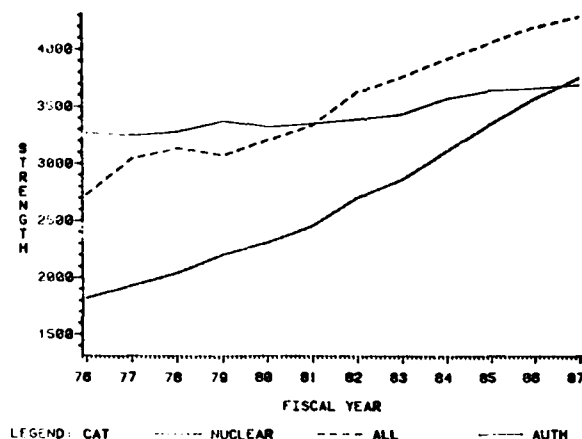
NOTE: The lower solid line is normal RMC. The upper solid line is RMC plus Nuclear Special Pays plus Submarine Pay but does not include Sea Pay, which ranges from \$1,800/yr to \$4,920/yr for qualifying officers assigned to sea billets. Broken lines represent salary percentiles for engineers employed by 48 utility companies, including at least 14 nuclear utility companies.

C. MANNING. The problems associated with manning of billets requiring nuclear qualified officers are dominated by the needs of nuclear-powered submarines. The numbers of nuclear powered surface ships and their manpower requirements are small relative to the total requirement for nuclear-qualified personnel. Manning levels of surface nuclear are addressed briefly, but the focus in this analysis is on the submarine forces. Nuclear submarine manning is difficult to quantify precisely because the submarine officer community (designator 1120) has diesel-powered submarines with associated ship and shore billets, and nuclear-powered submarines with their own particular manning needs.

Figure 4 shows total authorizations (AUTH), which include those specifically requiring a submarine officer in addition to a number of shore billets (designator 1000/1050) apportioned to the submarine community, compared to the number of personnel (STRENGTH) in each qualification category. Apportionment is based on availability of such billets and requirements for balanced shore rotation. From this figure, it is very clear that the submarine community at large was undermanned before the end of FY81. However, beyond FY81 it is difficult to quantify the nuclear shortage, because the Navy does not make a distinction between nuclear and general submarine officer billets. It is the Navy's goal to man all shipboard billets (except 8 billets for each diesel-powered submarine - currently 40 billets) with nuclear-qualified officers. Although the community goes from 107% manned to projected 116% manned from FY82 to FY87, the percent of authorizations filled by nuclear officers grows from about 82% in FY82 to a projected 104% in FY87. Appendix D contains similar displays by grade groupings for FY82-FY87 (prior data are unavailable). Figure D.3 shows that a large O-4 to O-6 shortage will continue beyond FY87.

Figure 4

SUBMARINE MANNING O-1 THROUGH O-5



NOTE: NUCLEAR includes all nuclear-trained officers; while the ALL category includes all submarine-trained officers.

Even for 1987 it is still difficult to determine precisely the manning without some further investigation. For example, there will still be 5 diesel submarines in commission in 1987, so at least some of the "1120" billets do not require nuclear qualification yet there is sufficient inventory to fill both nuclear and diesel submarine billets with nuclear qualified personnel. At this time the number of Commanders and below who possess nuclear qualifications is projected to match total submarine billets however, grade distribution of the inventory will still be the problem.

The Navy plans to use non-nuclear qualified officers on board nuclear powered submarines through 1994, when a sufficient supply of nuclear qualified officers exists to fill all shipboard billets. If all officer shipboard billets are filled with nuclear-qualified officers, then the Navy would have required 1991 officers on board submarines, as shown in Table 9 below. Eighty-seven percent of that requirement was filled by nuclear officers in FY81. By FY92 this requirement will grow to 2286 and will be 97% filled by nuclear-qualified officers. General submarine officers will be needed until 1994 to fill certain crew positions that do not require nuclear qualification. Shore billets for both groups of officers are needed to provide each with adequate shore rotation.

Table 9
Nuclear Officer Phase-In Schedule

Positions	81		87		92	
	All Nuclear Requirement	Phase In % Nuclear	All Nuclear Requirement	Phase In % Nuclear	All Nuclear Requirement	Phase In % Nuclear
Junior Officer (JO)	1127	96%	1260	96%	1295	100%
Department Head (DD)	522	58%	583	69%	599	90%
Executive Officer (XO)	170	100%	190	100%	195	100%
Commanding Officer (CO)	172	100%	192	100%	197	100%
TOTAL	1991	87%	2225	90%	2286	97%

Table 9. Requirements are Navy's estimate of shipboard billets only. Phase-In % nuclear is based on current plan to phase in all nuclear officers.

NOTE: Requirements are Navy's estimate of shipboard billets only. Phase-In % nuclear is based on current plan to phase in all nuclear officers.

All of this suggests that the nuclear authorization line is somewhat lower than the total 1120 authorization line shown in Figure 4. Even so, the 1987 supply of nuclear-qualified personnel may possess a grade

distribution different from the authorization distribution by grade. Such a grade imbalance is likely to persist in the LCDR (O-4) and CDR (O-5) pay grades because of inadequate accessions in the early 1970's.

Tables 10 and 11, respectively, show the manning from 1982 to 1987 for Ensign (ENS) through Lieutenants (LT) and for LCDR to CDR, respectively. These data show a 47% increase in the supply of junior officers with nuclear qualifications and a 13% increase in the supply of LCDRs and CDRs. Even so, there will still be about a 30% shortage in grades O-4 to O-6 through 1987, as shown in Appendix D. Overall, the supply of nuclear-qualified officers below the grade of Captain is projected to grow by 39%, while the authorizations will grow by 9%.

Table 10
Submarine Manning
Ensign through Lieutenant
Inventory (% of authorization)

<u>FY</u>	<u>NSO</u>	<u>GSO</u>	<u>TOTAL</u>	<u>AUTHORIZATIONS</u>
82	2039(105%)	599(31%)	2638(135%)	1948
83	2183(112)	808(31)	2746(141)	1949
84	2424(119)	546(27)	2970(146)	2035
85	2646(128)	457(22)	3103(150)	2074
86	2841(137)	367(18)	3208(155)	2074
87	3000(144)	283(14)	3283(157)	2089

NOTE: FY83 through FY87 inventory and authorization based on current Navy projections. NSO is Nuclear Submarine Officers and GSO is General Submarine Officer.

Table 11
Submarine Manning
Lieutenant Commander and Commander
Inventory (% of authorization)

<u>FY</u>	<u>NSO</u>	<u>GSO</u>	<u>TOTAL</u>	<u>AUTHORIZATIONS</u>
82	664(46%)	322(22%)	986(69%)	1438
83	679(46)	289(19)	968(65)	1486
84	688(45)	261(17)	949(62)	1535
85	703(45)	256(16)	959(61)	1570
86	727(46)	256(16)	983(62)	1586
87	750(47)	254(16)	1004(63)	1603

NOTE: FY83 through FY87 inventory and authorization based on current Navy projections. NSO is Nuclear Submarine Officer and GSO is General Submarine Officer.

The projections presented above were made by the Navy. In this analysis similar projections were made by applying 3-year average continuation rates by years of commissioned service to the end FY82 actual strength. The FY87 strength and the continuation rates used to project this strength are shown in Table 12 below, along with the end FY82 strength. The supply of nuclear-qualified officers with less than 9 years' service increases by 44%, assuming an annual input of 587 newly trained officers. For more experienced officers, those with more than 9 but less than 21 years, the supply increases by only 14%. Overall, the supply of nuclear-trained officers with less than 21 years of service is projected to grow by 36%.

Table 12
Nuclear Trained Submarine
Officer Supply Projection

<u>YCS</u>	<u>END FY82</u>	<u>END FY87</u>	<u>CONTINUATION RATE</u>
2	388	587	.9916
3	407	582	.9749
4	390	567	.8640
5	326	490	.6803
SUBTOTAL	1511	2226	.8870
6	224	334	.8439
7	171	186	.7894
8	117	155	.8610
9	86	131	.9099
10	89	115	.9145
11	63	107	.9113
12	81	88	.8964
13	47	68	.9136
14	51	53	.9529
15	64	58	.9711
SUBTOTAL	993	1295	.8742
16	50	44	.9515
17	38	58	.9543
18	52	36	.9593
19	38	41	.9889
20	53	54	.9538
21	47	41	.9286

NOTE: Projections shown to FY87 based on 3-year average continuation rate. YCS is years of commissioned service.

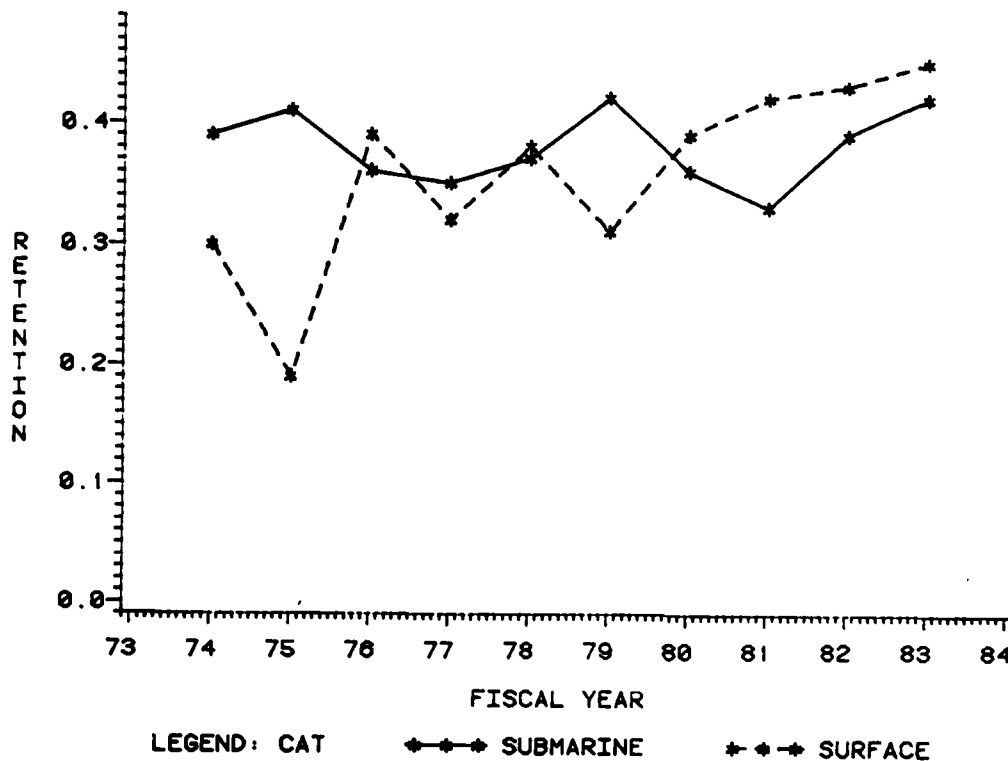
Manning projections for surface officers are more difficult. There are only about 518 surface nuclear officers with less than 20 years' service and only 13 nuclear powered surface ships (a 14th ship is sched-

uled for commissioning in 1987)). In general shortages exist in the senior grades, as in the submarine forces. The Navy reports a shortage of 39 O-5's and 43 O-4's, for a combined O-4/O-5 manning of 58%, which can be attributed primarily to insufficient accessions from the mid-1960's to the early 1970's, creating in turn a need for higher retention among this group. Consequently, the numbers necessary to maintain required manning levels were not achieved.

D. RECRUITING/RETENTION AND PAY. The effectiveness of the special pays available to Navy nuclear officers can be evaluated by examining the relationship between changes in the value of the special pays and subsequent changes in retention or recruiting. This section examines this relationship and the implications of the results with respect to the appropriateness of the special pays these members receive. The analysis begins with an examination of retention.

Figure 5 compares the level of retention of submarine officers and surface officers. The comparison to surface officers instead of to some other community such as aviators is due to the similarity in career paths, especially with respect to sea duty. Retention rates depend on compensation available to the member, kind of duty performed, and other factors which influence a member's choice to leave or stay in the military beyond completion of initial service obligation. The Navy, in a supplement to its annual report required by Title 37 U.S.C. to the Armed Services Committee, stated, "When accessions goals are reached for a given year group, a retention rate of about 44 percent is needed in order to fill required department head sea billets. Since accession goals were not met for year groups now passing through the retention window, a higher retention rate of 55 percent is currently required to fill required billets from a smaller initial base." It is observed that FY83 is the first year during which accession goals have been met.

Figure 5
NAVY RETENTION



NOTE: FY83 data is the most recent projection available for end fiscal year.

The peak in FY79 represents the retention history for the cohort completing the minimum service requirement (MSR) in FY77. This entire cohort was eligible for the Annual Incentive Bonus or the Continuation Bonus at increased rates. In FY76 many officers may have left the Navy before implementation of the new program. Furthermore, only the Continuation Pay was available in FY76 and earlier. The low retention in FY81 is for those completing MSR in FY79 and may be attributable to an inflationary erosion in the value of the bonus and the surge in demand for experienced, technically qualified personnel immediately after the incident at Three Mile Island (27 March 1979). Pay raises and rate changes to the bonus have improved retention for those completing MSR in FY80 and beyond.

This analysis will not attempt to explain or quantify the contribution or interaction of all the factors that influence the stay/leave decisions of nuclear-trained officers. However, some simple estimates of the influence of pay on retention will be examined. The effect of pay on retention is frequently measured by the "pay elasticity." Pay elasticity in this context is a number defined as the percent change in

retention probability divided by the percent change in pay intended to induce the change in retention behavior. It can also be interpreted as the percent change in retention induced by a 1 percent change in pay.

Wetzler [3] estimated the pay elasticity to be between .83 and 1.4 for nuclear officers. He found that elasticities were higher (in the range 1.96 to 3.98) for NROTC commissioning sources but lower for Naval Academy graduates (.47 or less). This was one of the first such studies of nuclear-trained officers. A more recent study, Nakada [4], estimated an overall elasticity of 1.6. This implies that a 1 percent change in pay should induce a 1.6 percent change in retention. To illustrate and quantify the effect of pay on the stay/leave decision, retention rates were plotted against the value of all special and incentive pays available to a typical Lieutenant completing the minimum service requirement (MSR). This plot is shown in figure 6 below. Values of Special and Incentive pays in each year were adjusted to May 1983 according to the May CPI from 1973 through May 1983. These pays included Submarine Pay, Sea Pay and the Continuation Bonus available in each of those years. The straight line through the points is the result of an ordinary least squares (OLS) regression. This linear regression produced the following estimates:

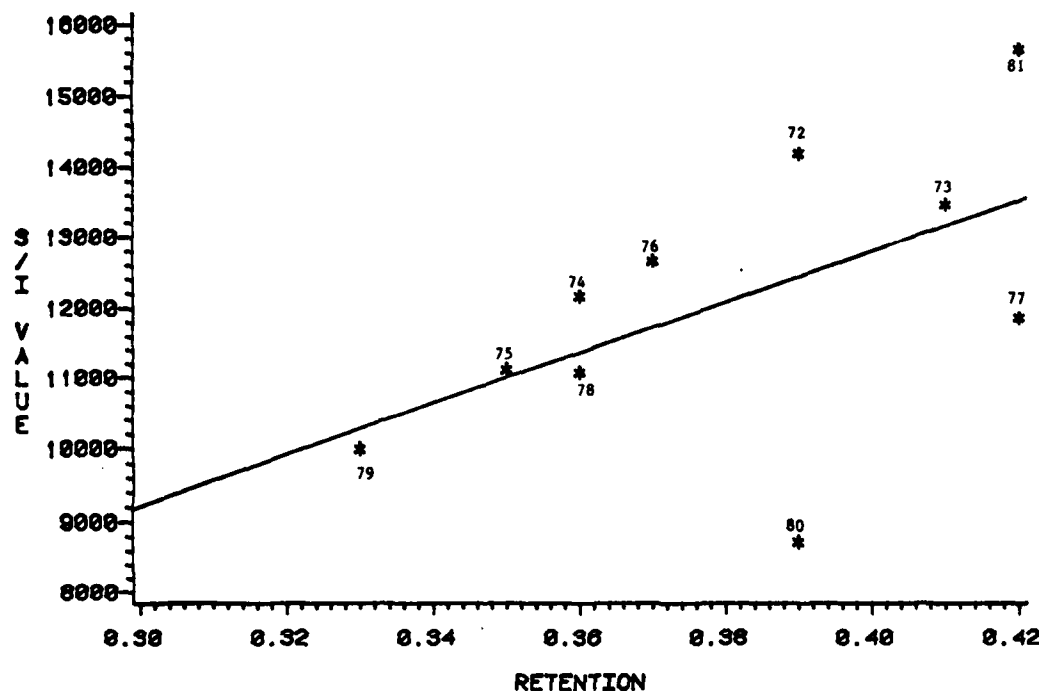
$$\text{RET} = .22423 + .585785 * \text{PCNT},$$
$$(.07721) \quad (.28861)$$

where RET = retention rate

PCNT = percent of total pay accounted for by
special pays, and the correlation is .34

standard errors of estimates in parentheses.

Figure 6
RETENTION AND PAY



RETENTION

NOTE: Retention is calculated as strength at MSR+2 years divided by strength at MSR - 1 year. Data for FY81 are the best estimates available, since not all officers completing MSR in FY81 have reached MSR+2 at this writing. Data for all years adjusted to 1983 value using CPI.

At the average present value of total compensation between FY74 and FY 83 (\$45,223) and the average retention (38%), the resulting elasticity is 1.54, when average compensation excluding special pays was \$33,142 in May 1983 dollars. This implies that a 1 percent change in pay is likely to induce a 1.5% change in retention. Table 13 below shows possible retention rates under various inflation scenarios over the next 4 years (the present legislation expires in 4 years, 1987).

Table 13
Impact of Inflation on Pay and
Retention through 1987
Inflation Rate

	0%	4%	6%	8%	10%
RMC (O-3)	33,195	38,833	41,907	45,161	48,600
NUCPAY	7,000	8,189	8,837	9,523	10,248
OTHER S/I (O-3)	7,200	8,422	9,089	9,795	10,541
TOTAL	47,395	55,444	59,835	64,480	69,391

FY87 Retention Rate

ALL ADJUSTED	.42	.42	.42	.42	.42
NUCLEAR ADJ	.42	.41	.40	.39	.39
NO ADJ	.42	.39	.38	.37	.36

Other S&I pays include Sea Pay and Submarine Pay for a typical O-3. RMC is typical for O-3. Nuclear ADJ is retention rate if Nuclear Pay is adjusted for inflation, but other S&I pays are not inflation adjusted. No ADJ is made if only RMC is adjusted for inflation.

One may conclude that if Nuclear Pays are adjusted but Sea Pay and Submarine Pay are not adjusted and assuming inflation is no higher than 10% then the relatively high recent retention will erode to no lower than 39%, the average between FY74 and FY83. This conclusion assumes that all other factors remain constant. We have already indicated that civilian job opportunities in the nuclear industry are forecasted to decline over this period of time, so these estimates may be slightly pessimistic. On the other hand, if none of the special pays is adjusted for inflation and inflation is as high as 10%, then the retention could drop to 36% if the effect of other factors not included in the estimate do not change. A 4% inflation rate implies an estimated 39% retention rate by 1987. The analysis also suggests that it would require a \$3,300 pay increase for junior officers to achieve the ambitious goal of 44% retention.

For surface nuclear officers, the average retention rate was 37% - not significantly different from the submarine nuclear retention rates. Due to small population sizes, the retention in each FY varied widely from the average. Good and bad retention years seem to coincide for these groups. FY79 and FY83 rates were good for both groups, while FY81 was bad for submariners and FY82 was unfavorable for surface officers.

Recruiting incentives such as the Accession Bonus are more difficult to quantify. The accession bonus is paid to NROTC, Naval Academy, and OCS students. For NROTC and Naval Academy commissioning sources it provides an incentive to choose Navy Nuclear Power Training over other

alternatives within the Navy, but for OCS it must be sufficiently attractive to an individual whose choices include civilian alternatives. The following table excludes NROTC and Naval Academy procurement, but focuses on the Navy Recruiting Command accession history for nuclear power training. Many factors besides the Accession Bonus influence procurement into nuclear power training. The method and timing of the bonus payment have changed, in addition to scholarship programs, and authority to pay students in active duty status in pay grade E-3 has recently been introduced.

Table 14
Navy Recruiting Command Nuclear Accession History

<u>FY</u>	<u>Goal</u>	<u>Achieved</u>	<u>%</u>	<u>Bonus</u>	<u>Bonus Value</u> (May 83 dollars)
72	125	98	78	0	0
73	235	112	48	0	0
74	165	61	37	0	0
75	220	129	59	0	0
76	200	182	91	1500	2627
77	253	113	45	3000	4921
78	376	159	42	3000	4599
79	380	174	46	3000	4152
80	263	115	44	3000	3626
81	263(21)	127(11)	48(52)	6000	6606
82	270(10)	191(13)	70(130)	6000	6205
83	258(41)	265(41)	103(100)	6000	6000
84	257(59)	257(59)	100(100)	6000	

NOTE: The increased Accession Bonus of \$6,000 was authorized on 1 January 1981. Prior to that, the Accession Bonus was paid only upon completion of nuclear power training. Since that date, individuals receive \$3,000 upon acceptance of an agreement to attend nuclear power training (as early as fall semester of the junior year in college) and an additional \$3,000 upon completion of training. The success rate in FY83 represents those recruited since 1981. School causes up to a 2 year lag. Data in parenthesis represent surface nuclear officers and supplement submarine nuclear numbers.

Table 15 shows the desired number of accessions from OCS, NROTC and the Naval Academy into nuclear power training.

Table 15
Nuclear Officer
Accession Goals and Actual
FY79 - FY83

	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83*</u>
Submarine Nuclear					
Goal	680	655	655	666	666
Achieved	443	444	498	518	666
%	65%	68%	76%	78%	100%
Surface Nuclear					
Goal	103	103	103	103	155
Achieved	116	158	60	107	125
%	113%	153%	58%	104%	81%
Both					
Goal	758	758	758	769	821
Achieved	559	602	558	625	791
%	74%	79%	74%	81%	96%

*As of June 1983.

The 1971 Quadrennial Review of Military Compensation determined that:

"While the Navy receives enough qualified volunteers to fill its [nuclear] officer quota it neither accepts nor graduates enough officers to meet its nuclear submarine force requirements."

This condition continued between 1972 and 1982, when only 74% of the volunteers eligible for interview were accepted into the program. (The acceptance rate prior to 1972 was 31% of the applicants). Their acceptability was determined through an interview process conducted by the Deputy Assistant Secretary of Energy for Naval Reactor. The acceptance rate has continued to increase, and in 1983 an adequate number of eligible personnel were accepted into the program to meet the Navy's accession goals. The effects of insufficient prior years' accessions will remain for many years to come. Thus, the manning for grades O-4 and O-5 (inventory is 46% of total 1120 authorization for O-4 and O-5) is the most critical and can be compared to year groups when frequently only 1/3 of the interviewed personnel were accepted.

Finally, recruiting must also be viewed in terms of starting salaries offered by those competing for the same potential resource. Further, the salary growth or "salary compression" must be examined. Appendix B contains information showing starting salaries offered to Bachelor candidates earning degrees in Nuclear Engineering. Figure 3 earlier showed the potential growth in military salaries compared to those offered to engineers working with the utility companies.

The Accession Bonus is the first incentive pay the Navy can offer to attract qualified applicants into nuclear power in the Navy. The analysis presented above shows the importance of a suitably attractive incentive to induce qualified college students to apply for nuclear training in the Navy. Since FY82 Navy Recruiting Command has been able to recruit sufficient numbers by offering the Accession Bonus to college students. Before 1 January 1981, the bonus was paid only upon completion of Navy nuclear power training. Recruiting shortfalls probably resulted. Considering the training involved, it seems appropriate to pay half (\$3,000) up front and the remainder on completion of training.

It was asserted earlier that the Nuclear Officer Pays may appropriately serve as premiums to Sea Pay or Submarine Pay, if the qualifications held by these officers and the attendant duties by their nature require more time at sea or on a submarine than for general submarine or surface officers without these qualifications. It was asserted that greater responsibility, or longer duty hours, might be valid arguments favoring the bonuses. The latter could not be verified or quantified empirically. However, personal interviews with nuclear-qualified officers confirmed that the latter assertion is perceived to be true.

To examine sea duty time, data were extracted from Navy reports on officers performing duty where Sea Pay was authorized. This method is recognized to be different from the Navy's method of computing sea duty time for rotation purposes. Submarine Officers were compared to all surface officers. It was not possible to separate out nuclear-qualified officers from either category. The results may still be considered reasonable estimates of nuclear submarine officer sea time compared to non-nuclear surface officer sea time. Since the number of general submarine officers at sea is a small fraction of all submarine officers at sea and the nuclear surface officers are similarly a small fraction of all surface officers, the estimate is reasonable. Table 16 below shows that by this measure, O-3 and O-4 submarine officers receiving Sea Pay have less sea duty than surface officers. However, this situation is reversed for O-5's. Although O-5's are almost exclusively nuclear qualified whereas O-3 and O-4 data include a larger proportion of general submarine officers, the slight reversal in the trend at O-5 is probably due to the relative shortage of O-5 nuclear submarine officers. This condition has forced some consecutive sea tours for O-5's. Based on the projections made earlier in this analysis, shore opportunity for O-5's will continue to be degraded until ample supplies of junior officers are promoted to these grades. At present, these results imply that Nuclear Officer Pays do not serve as premiums for longer expected time at sea. At the O-5 level, though, the pay may very appropriately be considered a premium for consecutive or longer than expected sea time. There is clearly some variation in time at sea within grade but, for typical officers, the difference in medians between submarine and surface officers is only about 1 year.

Care must be taken in interpreting data shown in Table 16. For example, since 1981 the off-crew time of the Fleet Ballistic Missile submarine (two crew submarines) has been counted as sea duty. Over time, we might expect an increase in the measured sea duty for these officers, even if there is no change in the assignment and rotation pattern. Other factors, such as the lengthy training for junior submarine officers will always be reflected by a smaller accumulated sea duty relative to surface officers earlier in a career. The shortage of O-4 and O-5 nuclear submarine officers will necessitate intensive sea duty for these officers which cannot be reduced until an adequate supply of more junior officer, is available and promoted to relieve them.

Table 16
Sea Duty Time (Years)
Officers at Sea as of End FY82

		Percentile				
		25%	50%	75%	90%	IQR
O-3	Submarine	1.09	2.02	2.96	4.38	1.87
	Surface	2.19	2.92	3.88	5.10	1.69
O-4	Submarine	3.71	4.97	6.73	8.27	3.02
	Surface	5.20	6.20	7.32	8.50	2.12
O-5	Submarine	7.67	9.18	10.95	12.61	3.28
	Surface	6.97	8.15	9.61	11.16	2.64

NOTE: Results do not include data for officers ashore as of end FY82. Sea duty for such officers may not be accurate, as their pay is unaffected while ashore. IQR is the interquartile range - the difference between the 75th and 25th percentiles.

The current career plan for these officers calls for 9 years of shore duty in the first 20 years of service. It is difficult to make comparisons between time in service and pay grade; nevertheless, the comparison between surface and submarine officers shows that the senior grades do have less shore opportunity. The goal for executive officer sea tours is 2 years. These tours are currently 2.5 to 3 years for most officers. The goal for command tours at sea is 3 years. Most are serving 3.5 to 4 years. In both cases the Navy is making progress toward these goals as manning improves in these grades. In all grades shown, the variation (variation was estimated by IQR - interquartile range, the difference between the 75th and 25th percentiles) was greater for submarine officers

than for surface officers. This may indicate that it is more difficult for a junior submarine officer to know how long he will be at sea over a career in submarine service. As manning improves, so will shore opportunity. At the end of FY82 submarine officers at sea in grade 0-4 and below have less accumulated Sea Pay credit than surface officers who were at sea. If manning were adequate at the 0-5 level then shore time would be as well.

With regard to consecutive years of sea duty, there is little difference between submarine and surface officers in aggregate. Table 17 shows that 8.7% of all surface officers have more than 3 consecutive years at sea while 8.6% of all submarine officers have more than 3 consecutive years of sea duty. However, when examined by grade, a pattern consistent with the preceding analysis is revealed. Three or more years at sea is more common for 0-4's and 0-5's in submarine service than for surface counterparts. In pay grades below 0-4 or above 0-5 the circumstances are reversed. Two factors may explain these results. First, the insufficient supply of 0-4's and 0-5's; and second, a mandatory requirement that the senior crew members on nuclear powered submarines possess Navy nuclear qualification.

Table 17
Percent of Officers Receiving
Career Sea Pay Premium
(> 3 years consecutive sea duty)

Category	Grade					Total
	0-1/0-2	0-3	0-4	0-5	0-6	
Submarine	0.1%	10.7%	18.6%	33.0%	3.9%	8.6%
Surface	0.1%	18.3%	15.0%	9.1%	6.1%	8.7%

Data for submarine category do not exclude general submarine officers. Data supplied by Navy Finance Center.

E. COPAY ALTERNATIVE TO AIB. Recall that all nuclear-qualified officers beyond initial service obligation (3 to 5 yrs, depending on source of commissioning) receive the Annual Incentive Bonus of \$6,000 per year with no a priori service obligation incurred. Officers with less than 10 years of service who are willing to incur a 4-year obligation may receive an additional \$1,000 per year for each of the 4 years of obligation. This difference is less than 2.5% of the typical RMC for these officers and less than 2% of RMC when Submarine Pay and Sea Pay are included (\$40,195 vs. 47,395) for typical 0-3. The percent of total pay accounted for by special and incentive pays increases from 28.45% to 29.96%. If we apply the retention model presented earlier and change the value of PCNT in the regression from .2845 to .2996, then retention estimate is increased from 39.09% to 39.97%, or about 2% improvement. The return to the individual is so small for the obligated service he must incur that it is doubtful that even one additional person per year

is convinced to stay beyond initial obligation by COPAY. Nearly all of those accepting the pay were probably stayers anyway. In fact from personal interviews we have determined that those not accepting the addition use their freedom-to-leave as a "bargaining chit" when dealing with their detailee. Table 18 shows that only about 25% of those with 5 to 6 years since Basic Active Service Date (BASD) have accepted COPAY. The remainder are leaving their options open. Almost 60% of the more senior personnel received the pay during calendar year 1982. (Individuals must accept the pay before completion of 10 years or forfeit the option.)

Table 18
COPAY Acceptance Rates

<u>BASD YEAR</u>	<u>YRS Since BASD</u>	<u>AIB Only</u>	<u>COPAY Only</u>	<u>Received Both in CY82</u>	<u>% Receiving COPAY</u>
77	5	172	41	14	.24
76	6	111	51	22	.39
77	7	63	46	16	.49
78	8	43	51	8	.58

Source: Finance tape provided by Navy Finance Center.

As mentioned previously, there is no specific a priori obligation incurred as a result of accepting the Annual Incentive Bonus. It is paid on the 30th of September each year to nuclear officers who have completed their commissioning obligation. The purpose of this Incentive Bonus is to improve retention of junior- and middle-grade nuclear officers, yet because of no prior commitment, there are no restrictions to preclude payment to officers who are known to be separating from the Navy. An officer may receive \$6,000 from the Navy today based on the preceeding year of service and not be employed by the Navy tomorrow. Likewise, an officer may receive \$6,000 today in the form of an Annual Incentive Bonus and a \$7,000 installment of a \$28,000 bonus tomorrow for future service if he signs an obligated service agreement. Providing special pay to personnel with documented pending separations may seem inconsistent with the principal purpose of a retention incentive. However, the Navy also considers AIB as an addition to pay for the service performed in the preceeding year by officers that are difficult to replace. The Navy has noted that individuals who have received the last installment of a COPAY agreement may have to wait 2 years before resumption of AIB payments. This is correct, but it results because COPAY is paid at the beginning of each year of obligated service, and AIB is paid at the end of each service year or any part thereof. Furthermore, these same individuals received both AIB (for past service) and COPAY (for future service) bonuses when the COPAY agreement was made. If the purpose of the Annual Bonus is compensation for services rendered, then it should be paid monthly, and only in the months when duties involving the direct supervision operation, and maintenance of a nuclear power plant are performed.

The history of these pays indicates that it is a retention incentive rather than compensation for services. In any case, the Annual Bonus is believed to have been in competition with the Continuation Pay since its inception in July 1976. The surface nuclear force is particularly small, and the present dual system does not allow the Navy to control its losses since there are no a priori service commitments associated with the Annual Bonus.

The ultimate cost of the dual system can be analyzed by comparing cost (and retention) from the beginning of FY74 to the end of FY76 with the cost (and retention) from the beginning of FY78 to the end of FY80. In the former time period, only COPAY existed, while during the latter interval both COPAY and AIB were authorized. From FY78 to FY80 the Accession Bonus was also authorized, but the cost of this program has been excluded from this analysis. Table 19 below shows the cost (in June 1983 dollars) for the two time periods. It shows a \$13,787,526 cost increase as a result of the dual system.

Table 19
Cost Comparisons with and without AIB

COPAY ONLY		COPAY PLUS AIB	
FY74	\$2,997,528.8	FY78	6,921,610.7
FY75	2,532,197.2	FY79	7,457,689.2
FY76	2,164,371.8	FY80	7,102,324.1
TOTAL	7,694,097.8	TOTAL	21,481,623.0

Costs were extracted from Table 1 and adjusted to June 1983 dollars. Accession Bonuses for FY78, FY79, FY80 for 448, 487, 488 were excluded before making the adjustment, because there was no Accession Bonus authorized from FY74 through FY76.

The almost three-fold increase in cost might be expected to have a significant impact on retention. However, the structure and interaction of the two pays produced only marginal retention rate improvement for senior officers (11 through 17 YCS). The senior cohort group is out of the eligibility window for COPAY, and thus the new AIB represented, a substantial increase in RMC for these officers. The junior officers (5 through 10 year group) retention actually declined slightly when AIB was implemented. Whereas from FY74 through FY76 junior officers had to obligate for 4 years to get COPAY, under the system from FY78 through FY80 the officer could receive nearly the same money with no obligation. One may conclude that COPAY alone was effective (and inexpensive since only those committed to the Navy were paid), but the introduction of AIB was costly (since everyone was paid) and less efficient. Table 20 below compares retention for the junior and senior officers in the pre-AIB and post-AIB environments. Overall, there was a negligible change in retention, but there was a reduction in retention for junior officers and an increase for more senior officers.

Table 20
Retention Comparisons with and without AIB

Without AIB	5-10 YCS	11-17 YCS	TOTAL
Begin FY74	771	590	1361
End FY76	458	471	929
3 YR Retention	.5940	.7983	.6826
Annual Retention	.8406	.9277	.8805
With AIB			
Begin FY78	829	579	1408
End FY80	478	490	968
3 YR Retention	.5766	.8463	.6875
Annual Retention	.8323	.9459	.8826

NOTE: Strength data supplied by Navy. Retention rates are cohort style.

RMC (excluding special and incentive pays), after adjusting for inflation, was about 6% less in the later time period, but was higher when the AIB legislation was implemented than in the FY78 through FY80 time period. Neither the Navy nor the service member could have projected the declining value of compensation relative to the CPI from the beginning of FY78 to the end of FY81. A retention incentive with an associated commitment would have provided the Navy with protection against the losses that resulted. If RMC after implementation of the AIB was equivalent to earlier RMC, then annual retention would be 92.8% for senior officers even without AIB payments. The Navy realized only a 2% improvement in retention for these officers because they were free to leave at any time. Relative to a 92.8% retention (achievable with adequate pay adjustments), the marginal cost of obtaining a 94.6% retention rate with a \$4,000 bonus is \$207,890 per additional manyear. The marginal cost would have been reduced tremendously if commitments were associated with the bonus.

F. SUMMARY. The declining growth in the civilian nuclear power industry has caused some shifts in manpower needs. As the number of plants under construction decreases (because of plant completions and no new starts), there are reductions in some engineering manpower needs. Of the largest four engineering disciplines required in the nuclear industry three (Civil, Mechanical, and Electrical) are projected to have negative growth; only one (Nuclear - the 3rd largest) projects growth. On-site positions are growing by 13%, while off-site positions are declining. This will mean greater opportunity at the low end of the compensation scale.

Overall Navy nuclear manning is improving and is projected to match or exceed requirements by FY87, but shortages will still exist in the middle grades (O-4, O-5) primarily because of less than adequate accessions from this cohort, causing increased sea duty for O-5's, and, in turn, reduced retention, further shortages, and so on. At the end

of FY82, LCDRs and below who are at sea have less accumulated Sea Pay credit than surface warfare officers at sea due to training and other rotational factors, but Commanders serve more time at sea due to operational requirements and inadequate manning.

Recruiting and junior officer retention have improved considerably since FY80. The Military Pay and Allowances Benefits Act of 1980 (signed 23 December 1980) increased all three bonuses for nuclear officers, and the results have been very positive. Navy Recruiting Command is now able to achieve stated goals, and retention is still improving.

Few people are accepting the Continuation Pay, preferring instead to keep their options open and take the Annual Bonus until such time as they decide to stay with the Navy. At this point, they like the higher Continuation Pay and the 4-year obligation. With no prior commitment for the Annual Bonus, the private sector (vice the Navy) drives retention and compensation levels. Officers who receive the Annual Bonus are free agents, and the Navy is not insured against their loss. As the Navy has already learned, losses in a small community can be particularly acute. An a priori commitment should be obtained from these officers for the additional pay.

VI. FINDINGS.

A. GENERAL. Current special compensation available to nuclear officers is sufficient to maintain retention above 40% in the short term. Current retention is expected to be at least 42%. To sustain this FY83 high retention rate on a long term basis would require an estimated \$3,300 increase in annual pay for junior officers. The Navy has documented a need to maximize retention of experienced officers in forthcoming retention year groups because of accessions shortfalls for these groups. The ability to achieve retention rates near or above 50% among these groups at a realistic cost is doubtful.

B. ANNUAL INCENTIVE BONUS. The Annual Incentive Bonus may have been an important factor in generating an improvement from 80% to 85% in the number of people, from the 11-17 year group, retained for 3 years. However, the 3-year retention for the group with less than 11 years has declined. This suggests that the AIB may be in competition with the Continuation Pay, thereby reducing its potential effectiveness in allowing the Navy to secure satisfactory management control over attrition.

C. CONTINUATION PAY. Continuation Pay should be enhanced as soon as legislation can be passed to:

1. Allow 3-, 4-, or 5-year contracts at a maximum of \$7,000 per year of obligation instead of the current restriction of 4-year contracts only;

2. Authorize and pay the bonus in one lump sum when the agreement is made; and

3. Allow the Navy to offer a maximum of 4 Continuation Pay agreements per service member for obligated service not beyond 24 years of service. The pay should be structured in such a way that the service member accepts the offer within 1 year of eligibility or forfeits one of the remaining opportunities for Continuation Pay.

D. ACCESSION BONUS. The Accession Bonus and other policies, i.e., E-3 pay and nuclear scholarships, are working very well at this time and should be retained in their present form.

E. NUCLEAR TRAINED AND QUALIFIED ENLISTED. Title 37 U.S.C. section 312a "Special Pay: Nuclear-trained and qualified enlisted members" should be repealed. Insofar as the Selective Reenlistment Bonus (SRB) authority of FY75 was equal in value and structure to the authority that expired under this section, the SRB has served well in its place.

VII. RECOMMENDATIONS.

A. The provisions authorizing the Annual Incentive Bonus should provide for its phase out no later than the end of FY90, provided that the recommended enhancements to the Continuation Pay have been made and proven effective.

B. Authorize contract length of 3 and 5 years in addition to the 4-year contracts currently authorized.

C. Authorize up to 4 agreements for each officer payable for obligated service not beyond 24 years of service.

D. Repeal the provision for a "Special Pay: Nuclear-trained and qualified enlisted members."

References

1. Special Pay for Certain Nuclear-Qualified Submarine Officers, 91st Congress, 1st Session, Report 91-141.
2. Report of the 1971 Quadrennial Review of Military Compensation, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs) December 1971.
3. The Effect of the Bonus on the Retention of Nuclear-Qualified Submarine Officers, Elliot Wetzler, Institute for Defense Analysis, September 1972.
4. Descriptive Statistics of Occupational Employment in Nuclear Power Utilities, Joanna R. Little, Ruth C. Johnson, Oak Ridge Associated Universities.
5. Engineering Salaries Special Industry Report, Engineering Manpower Commission of the American Association of Engineering Societies.
6. Military Compensation Background Papers, Department of Defense, Office of the Secretary of Defense, July 1982.

NUCLEAR SHIPS IN COMMISSION AND CREWS
END FISCAL YEAR

<u>FY</u>	<u>Ships</u>			<u>Crews</u>
	<u>SSN</u>	<u>SSBN</u>	<u>Surface</u>	
70	48	41	4	116
71	54	41	4	
72	58	41	4	135
73	62	41	4	
74	63	41	5	140
75	66	41	7	
76	67	41	8	150
77	69	41	9	
78	73	41	11	155
79	75	41	11	
80	74	40	11	158
81	82	39	12	
82	91	33	13	184
83	95	34	13	189
84	99	35	13	
85	99	37	13	
86	99	38	13	
87	99	40	14	
88	101	40	14	

The ships represented are those in commission; the crews represent total crews, including manned ships in overhaul or not yet commissioned, since ships in overhaul or not yet commissioned may require a crew.

PAY AT NUCLEAR REGULATORY COMMISSION (NRC)

Naval officers seeking employment with NRC can generally expect offers of GS-12, GS-13, or GS-14 for Lieutenants, Lieutenant Commanders and Commanders, respectively. The midpoint of pay in these civil service pay grades are:

GS-12	33,779
GS-13	40,168
GS-14	47,469

Typically, Lieutenants start somewhat higher than the midpoint, while the other grades start slightly lower than the midpoint. The resident inspector program in NRC authorizes higher pay for qualified inspectors stationed at reactor sites. The pay schedule for these personnel is shown in the table below. The NRC has 60 to 70 vacancies per year for degree holders with experience in reactor operations.

Special Salary Schedule
Occupational Coverage: All Resident Inspector Program Personnel In
Scientific and Technical Positions Who are Duty Stationed at Reactor or Nuclear Facility Sites

Annual Pay Rates										
Grade	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
CG-11	26959	27776	28593	29410	30227	31044	31861	32678	33495	34312
CG-12	32311	33290	34269	35248	36227	37206	38185	39168	40143	41122
CG-13	38422	39586	40750	41914	43078	44242	45406	46570	47734	48898
CG-14	45405	46781	48157	49533	50909	52285	53661	55037	56413	57789

Source: Nuclear Regulatory Commission

STARTING SALARY OFFERS

During the Spring of 1983 Oak Ridge Associated University under contract with the NRC, conducted a survey of universities offering academic programs in Nuclear Engineering. A summary of their results is shown below.

Nuclear Reactor Engineers Spring 1983 Graduates

Non-academic Monthly Salary Offer

	<u>Average</u> <u>Minimum offer</u>	<u>Average</u>	<u>Average</u> <u>Maximum offer</u>
Entry Level:			
Bachelors Degree	1866(+ 86)	2045	2223(+ 41)
Top Half Students (academically)	2092	2201	2309

The College Placement Council conducted a similar survey in 1982. Their survey categorized offers by type of employer. The data below were extracted from that survey.

Monthly Salary Offers to Nuclear Engineers (Spring 82)

Percentile/Average

<u>Type of Employer</u>	<u>10th</u>	<u>Average</u>	<u>90th</u>
Utility	\$1,940	\$2,068	\$2,187
Government	1,240	1,652	1,990

Offers declined 30% from July 1981 to July 1982 (from 349 to 244). It appears that there has been little movement in offers from 1982 to 1983 graduates. These results are consistent with the preponderance of data reflecting a lagging industry.

SUBMARINE MANNING

0-1 THROUGH 0-6

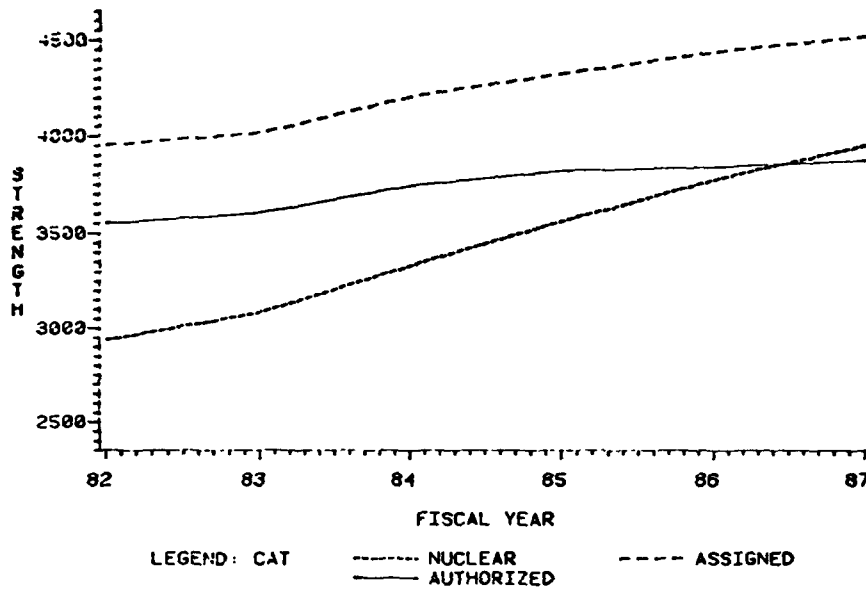


Figure D.1

SUBMARINE MANNING

0-1 THROUGH 0-3

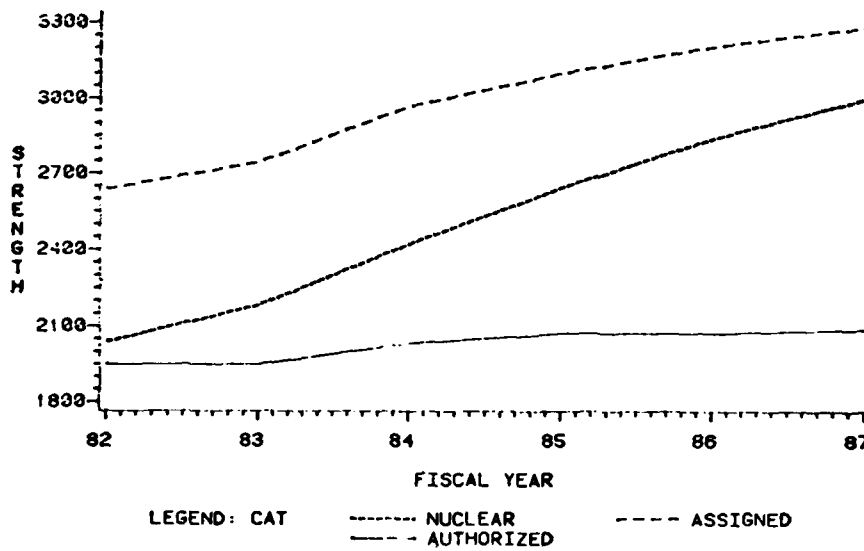


Figure D.2

SUBMARINE MANNING

0-4 THROUGH 0-6

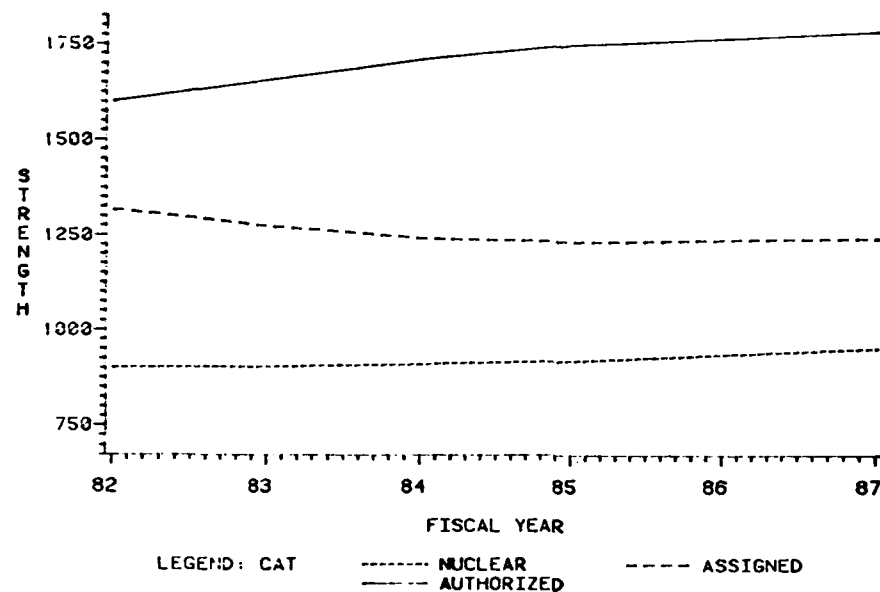


Figure D.3

SUMMARY OF RESPONSES

Nuclear Officer Incentive Pays

Issues:

1. General. Current special compensation available to nuclear officers is sufficient to maintain retention above 40% in the short term. Current retention is expected to be at least 42%. To sustain this FY83 high retention rate on a long term basis would require an estimated \$3,300 increase in annual pay for junior officers. The Navy has documented a need to maximize retention of experienced officers in forthcoming retention year groups because of accessions shortfalls in these groups. The ability to achieve retention rates near or above 50% among these groups at a realistic cost is doubtful.

2. Annual Incentive Bonus. The Annual Incentive Bonus may have been an important factor in causing an improvement from 80% to 85% in the number of people, from the 11-17 year group retained for 3 years. However, the 3 year retention for the group with less than 11 years has declined. With this groups the AIB is believed to be in competition with the Continuation Pay, thereby reducing its potential effectiveness in allowing the Navy to secure satisfactory management control over attrition.

3. Continuation Pay. Continuation Pay should be enhanced as soon as legislation can be passed to:

a. Allow 3-, 4-, or 5-year contracts at a maximum of \$7,000 per year of obligation instead of the current restriction of 4-year contracts only,

b. Authorize and pay the bonus in one lump sum when the agreement is made, and

c. Allow the Navy to offer a maximum of 4 Continuation Pay agreements per service member. The pay should be structured in such a way that the service member accepts the offer within 1 year of eligibility or forfeits one of the remaining opportunities for Continuation Pay.

4. Accession Bonus. The Accession Bonus and other policies, i.e., E-3 pay and nuclear scholarships, are working very well at this time and should be retained in their present forms.

5. Nuclear Trained and Qualified Enlisted. Title 37 U.S.C. section 312a "Special Pay: Nuclear-trained and qualified enlisted members" should be repealed. Insofar as the Selective Reenlistment Bonus (SRB) authority of FY75 was equal in value and structure to the authority that expired under this section, the SRB has served well in its place.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Defers to Navy.
Coast Guard	Concurs.
PHS	Concurs.
NOAA	Defers to Navy.
JCS	Defers to Navy.

LEGISLATIVE IMPLICATIONS

Nuclear Officer Incentive Pays

- (1) Amend 37 U.S.C. 312(a)(4) to authorize contracts of 3, 4 and 5 years, provided the period of new service does not extend beyond 24 years of service.
- (2) Amend 37 U.S.C. 312(a) to provide for lump-sum payments only.
- (3) Amend 37 U.S.C. 312(b) to authorize 1, 2, 3 or 4 agreements for each officer otherwise eligible and amend 37 U.S.C. 312(a) by elimination of 312(a)(3), which restricts bonus eligibility based on years of commissioned service.
- (4) Repeal 37 U.S.C. 312(a), Special Pay: Nuclear Trained and Qualified Enlisted Members.
- (5) Amend 37 U.S.C. 312c to extend the authority for the Annual Incentive Bonus to 30 September 1990. However, future legislation to further extend this expiration date should not be enacted unless the enhanced Continuation Pay proposal has not been adopted, implemented or judged effective.

37 U.S.C. 303
SPECIAL PAY: VETERINARIANS

37 U.S.C. 302a
SPECIAL PAY: OPTOMETRISTS

**SPECIAL PAY FOR OPTOMETRISTS
AND VETERINARIANS**

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SPECIAL PAY FOR OPTOMETRISTS AND VETERINARIANS

I. PURPOSE. To provide additional pay for optometry and veterinary service personnel to increase the ability of the Uniformed Services to attract and retain officer volunteers in these skills.

II. DATA SOURCES. Data were provided primarily by the Service Staffs of the Army, Navy, Air Force, Public Health Service and the Defense Manpower Data Center. Additional information was obtained from selected historical reports and studies, and background field interviews conducted at Fort Bragg, NC, Fort Jackson, SC, Portsmouth Naval Regional Medical Center, Portsmouth VA, and the National Naval Medical Center, Bethesda, MD.

III. HISTORICAL PERSPECTIVE. The origin of Special Pay for Optometrists and Veterinarians can be traced, in part, to the Army-Navy-Public Health Service Medical Officer Procurement Act of 1947. Although it did not specifically identify optometrists and veterinarians to receive the additional pay, it established a precedent by authorizing a payment of \$100 per month for physicians and dentists. In addition to this Act, part of the rationale for Special Pay for Optometrists and Veterinarians also resides in the effects of the Act of 9 September 1950. This Act established the so called "Doctor Draft". The law provided requirements for Selective Service registration and authorization for subsequent selected induction calls for health professionals in the fields of Medicine, Dentistry, Osteopathy, Veterinary Medicine and Optometry. In June of 1953, Congress made Veterinary Officers eligible to receive the \$100 per month additional pay which heretofore had been reserved only for physicians and dentists. The Senate report dealing with this action stated, "Since the veterinarians were subject to the Doctors Draft Act, they should also receive the extra pay which is extended to physicians and dentists."¹

For the next 18 years veterinarians received the additional stipend of \$100 per month and optometrists did not. Congress finally extended this supplementary remuneration to optometrists in 1971. The justification for optometrists was similar to that put forth for veterinarians.² It should be noted that there was never any Congressional testimony by DoD witnesses either in support of or against the extension of this pay to veterinarians or optometrists.³

From its inception the extra pay for physicians and dentists (later including optometrists and veterinarians) had a cut-off date or time constraint imposed on it. The term cut-off date was the date after which persons being accessed for the medical skill would not be authorized to draw the additional pay. For example, when the pay was first authorized for physicians and dentists in 1947 the law stated that all those regular officers commissioned before 1 September 1952 would be authorized to draw the pay. By default, anyone commissioned after that "cut-off date" would not be authorized to draw the pay while those people commissioned before that date would continue to draw the pay. Repeatedly, Congress

extended the cut-off date on or about the time it was due to expire. (A chronological list of the legislative extensions and pertinent Congressional action associated with the Special Pay for Optometrists and Veterinarians is at Appendix A.)

In May of 1974 Congress followed the normal course of action by extending the cut-off date for two years from 1 July 1975 to 1 July 1977. It deviated from this course, however, by designating the extension for only physicians and dentists. This meant that any optometrists or veterinarians who entered active duty after 1 July 1975 did not receive the special pay for two years. In September of 1977, Congress reinstituted the Special Pay for Optometrists and Veterinarians and extended the cut-off date for all health professional personnel until 30 September 1978. In justifying the extension of the special pay for physicians and dentists, Congress stated that there existed "a critical need to provide extra incentive ... to recruit adequate numbers of medical personnel."⁴ However, the justification for reinstating the special pay for optometrists and veterinarians differed, since Congress stated that for these personnel it was attempting to remedy an inequitable situation which allowed personnel who entered active duty prior to 1 July 1975 to be paid more than those who entered after that date.⁵ Thus, Congress seemed to shift its concern from attraction and retention to that of a need to be equitable.

As part of the FY80 Defense Appropriation Act, Congress directed a realignment and reduction of DoD veterinary functions. In doing so it indicated that the Air Force Veterinary Corps should be disestablished no later than 31 March 1980 with the Army becoming the Executive Agent for all DoD veterinary functions.⁶ The actual transition period was to encompass a three-year period scheduled to end 30 September 1983. At that time, virtually all Air Force Veterinarians will have transferred to the Army as veterinarians or will have remained in the Air Force and become Environmental Health Officers. To date, approximately 34 Air Force veterinarians have transferred to the Army and 116 have become Environmental Health Officers (EHOs). (There are no save pay provisions for EHOs.) An additional 60 veterinarians will remain in the Air Force as part of its research and development mission and will continue to draw the special pay. As these personnel voluntarily depart from the Air Force, the associated positions will be shifted to the Army.

The Uniformed Services Health Professionals Special Pay Act of 1980 generated the most recent change to the Special Pay for Optometrists and Veterinarians. This law made permanent the special pay of \$100 per month for veterinarians and optometrists and negated the requirement to periodically extend the cut-off date.⁷ The statutory authority for the Special Pay for optometrists is codified in 37 U.S.C. 302a and for veterinarians in 37 U.S.C. 303.

IV. METHODOLOGY. The first section of this analysis will address the total population of recipients of the Special Pay for Optometrists and

Veterinarians and define the specific composition for each Service. The second section will discuss the manning and other personnel factors which could be related to the pay. The third section will compare the pay of military vis-a-vis civilian optometrists and veterinarians.

A. COMPOSITION. Table 1 depicts the number of DoD Special Pay recipients and the associated costs. Personnel and costs are broken out by the specific health professional groups of optometrists and veterinarians. The number of veterinarians and commensurate costs have been reduced by approximately 45 percent since 1972. This is, in large part, the result of Congressional intent to reduce the number of veterinarians within DoD. The figures estimated for FY84 are expected to stay about the same in the future. The overall number of optometrists has remained fairly constant. Of particular note, however, is the severe drop in optometrists during the period of 1975 through 1977. This can be attributed partly to the two-year cessation in special pay when Congress failed to extend the pay to optometrists and veterinarians as discussed earlier.

Table 1
DoD Special Pay for Optometrists and
Veterinarians (Personnel and Costs)

FY	OPTOMETRISTS		VETERINARIANS	
	PERSONNEL	COSTS(\$000)	PERSONNEL	COSTS(\$000)
1972	569	\$683	916	\$1,099
1973	572	686	845	1,014
1974	536	647	787	944
1975	520	624	770	924
1976	521	626	721	865
1977	374	448	635	762
1978	479	575	665	798
1979	477	572	660	792
1980	473	567	633	761
1981	486	587	611	734
1982	530	636	614	737
1983(EST)	568	681	615	738
1984(EST)	583	700	498	598

Table 2 shows a breakout by Uniformed Service for FY81 through FY84. For optometrists, the proportion of costs and numbers of personnel between Services have remained relatively constant over time. The increase in Army veterinarians and the decrease in Air Force veterinarians is the result of the previously mentioned Congressional mandate which directed the Army to take over the veterinarian mission for DoD.

Table 2
Special Pay for Optometrists and
Veterinarians (Personnel and Costs) by Uniformed Service

FY	SERVICE	OPTOMETRISTS		VETERINARIANS	
		PERSONNEL	COST(\$000)	PERSONNEL	COST(\$000)
81	ARMY	195	\$234	365	\$438
	NAVY	138	169	0	0*
	AIR FORCE	153	184	246	296
	PHS	37	44	96	115
	TOTAL**	523	631	707	849
82	ARMY	229	\$275	405	\$486
	NAVY	132	158	0	0*
	AIR FORCE	169	203	209	251
	PHS	34	40	91	109
	TOTAL**	564	676	823	846
83***	ARMY	240	\$288	440	\$528
	NAVY	142	170	0	0*
	AIR FORCE	186	223	175	210
	PHS	42	50	100	120
	TOTAL**	610	731	715	858
84***	ARMY	250	\$300	440	\$528
	NAVY	148	178	0	0*
	AIR FORCE	185	222	58	70
	PHS	42	50	100	120
	TOTAL**	615	750	598	718

* The Navy has no veterinary mission.

** Totals will differ from Table 1 due to the inclusion of Public Health Service (PHS) data.

*** All Figures are estimates.

B. PERSONNEL CONSIDERATIONS. Tables 3 and 4 show the manning data for optometrists and veterinarians, respectively, by Service for FY79 through FY82. The data in the tables demonstrate that neither optometrists nor veterinarians have been seriously undermanned and that, at the present, the manning situation is excellent.

Table 3
Manning Data - Optometrists

SERVICE	FY79		FY80		FY81		FY82	
	AUTH	ASSIGN	AUTH	ASSIGN	AUTH	ASSIGN	AUTH	ASSIGN
Army	216	187	224	179	240	209	240	229
Navy	*	136	*	141	142	138	142	136
USAF	143	157	154	153	152	158	186	183
PHS	**	**	**	**	45	35	42	33
Total	359	344	378	332	579	540	600	581

*Unknown - assigned for FY79-FY80 not added to totals.

**Unknown.

Table 4
Manning Data - Veterinarians

SERVICE	FY79		FY80		FY81		FY82	
	AUTH	ASSIGN	AUTH	ASSIGN	AUTH	ASSIGN	AUTH	ASSIGN
Army	**	368	365	369	376	382	396	404
Navy	*	*	*	*	*	*	*	*
USAF	292	286	263	255	214	223	195	173
PHS	**	**	**	**	100	91	100	89
Total	292	286	628	624	690	696	691	666

*None authorized.

**Unknown - assigned not added to total.

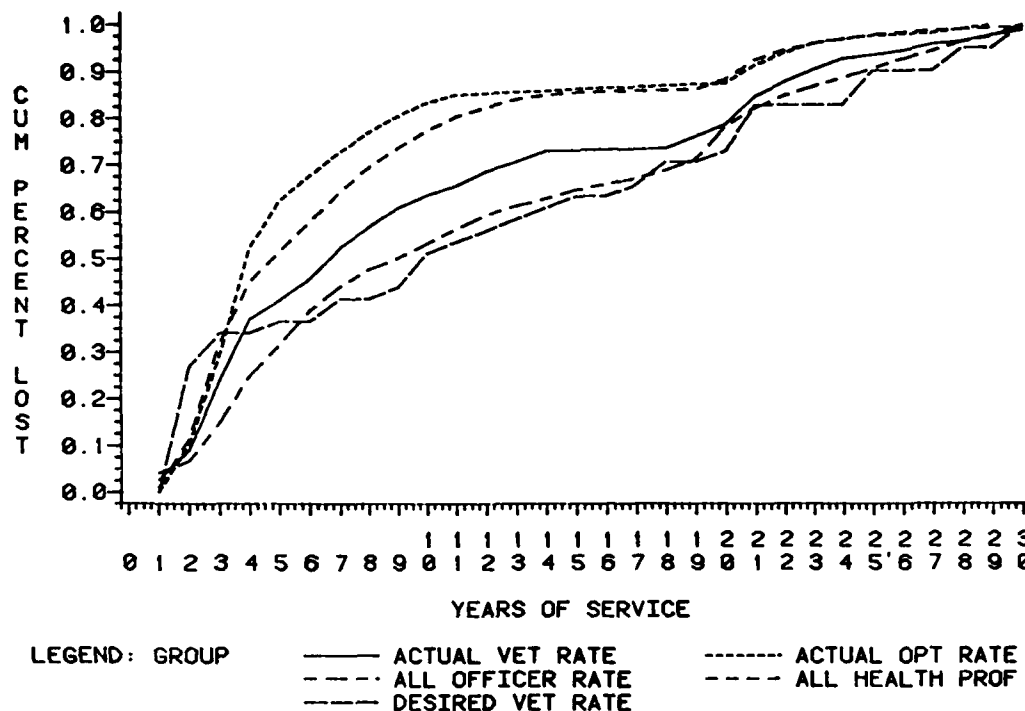
Figure 1 depicts the cumulative percentage losses for the separate categories of all Health Professionals (for the purpose of this analysis this excludes nurses but includes physicians, dentists, and allied medical fields), optometrists, veterinarians and DoD officers in general over a 30 year career. These rates were computed using aggregate loss data spanning the period of FY79 through FY82. Accordingly, they represent the average cumulative losses for those fiscal years and are useful in judging the likelihood of individuals to leave the Services at different points in a career. It also shows what the services have indicated as their desired cumulative loss rate for veterinarians. The desired cumulative loss rate for optometrists was not available.

The conclusion which can be drawn from this figure is that the tendency of optometrists to leave the service early in a career is greater than the average of all Health Professionals, while that of veterinarians is less. Veterinarians appear to have a loss pattern which occurs in graduated increments throughout a 30 year period. In the initial stages (years of service 1 through 4), veterinarians leave at a slower rate than that desired by DoD. After year 4, however, the loss rate for

veterinarians exceeds that desired by DoD. Optometrists, on the other hand, exhibit a loss behavior which suggests that if an optometrist can be kept until 10 years of service, that person will remain until at least the 20th year of service.

Figure 1

COMPARATIVE CUMULATIVE LOSS RATES



C. PAY COMPARISON. Figure 2 shows the comparison between earnings in the civilian sector and the military sector. The data for the 1980 civilian earnings was obtained from a 1981 survey of veterinarians conducted by the American Veterinary Medical Association.⁸ It is separated into two categories of veterinarians, those in private practice and those not in private practice, and represents mean income of these two groups at different points in a veterinary career. Military earnings are the sum of basic pay, allowances (BAQ and BAS), Special Pay and the

tax advantage gained from the non-taxable allowances, assuming due-course promotions. It is assumed that the service member is married and has two children. Calendar year 1980 earnings were computed using 75 percent of the FY80 military earnings and 25 percent of the FY81 military earnings.

The plot of these data shows that military earnings lag behind those of the civilian sector through the 17th year where they surpass those of the veterinarians not in private practice. In addition, it is obvious that there is a wide divergence between military earnings and those of veterinarians in private practice. This gap is not closed until the 22nd year after graduation from veterinary school.

Figure 2

MILITARY TO CIVILIAN PAY COMPARISON VETERINARIANS CALENDAR YEAR 1980

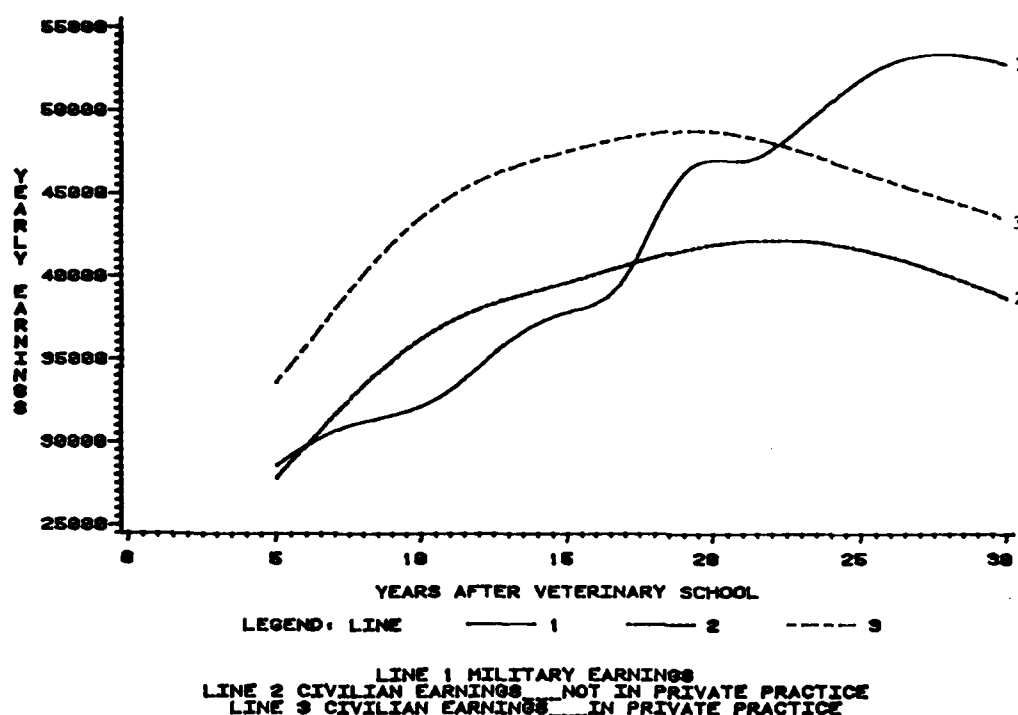
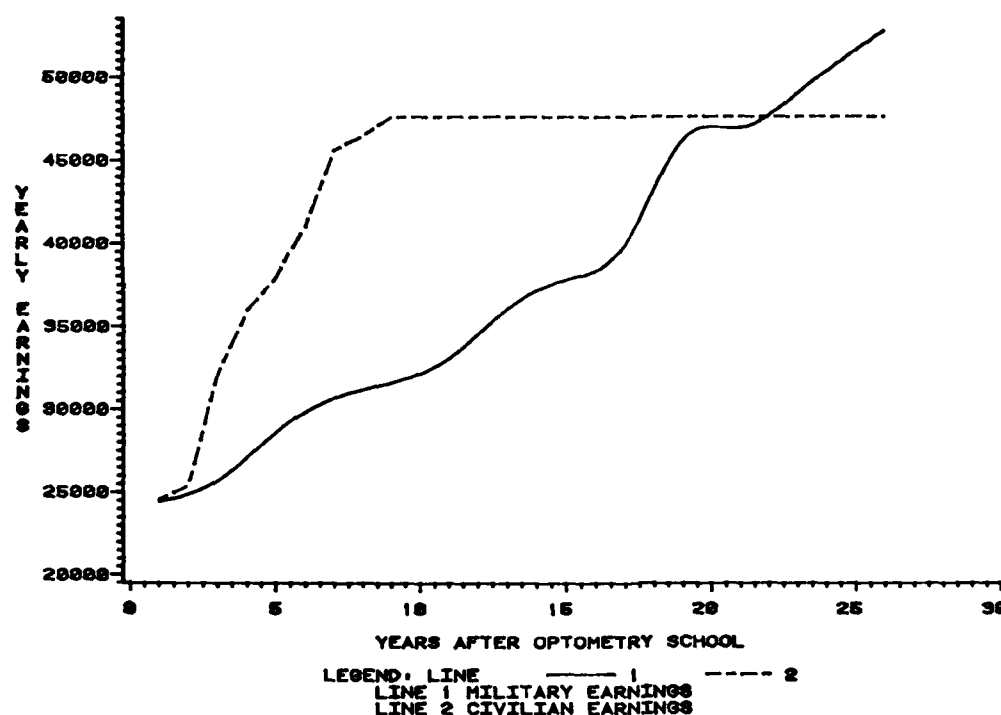


Figure 3 shows the comparison of pay for civilian and military optometrists. Data for civilian optometrists' earnings were obtained from the American Optometric Association (AOA) and are products of a study of 1979 income of optometrists conducted in 1980.⁹ AOA increased the 1979 income figures by 6.5 percent to account for growth/inflation during 1980. This percentage increase was based upon preliminary indicators the AOA has received from a 1983 survey which it is still compiling. Military earnings were derived in the same manner as those in Figure 2.

This figure shows that earnings in the civilian sector rise rapidly through the ninth year after optometry school and then level off. The AOA has indicated that the level-off after 9 years is a true representation of the data and the earning pattern of optometrists. As with Figure 2, military earnings lag far behind those in the civilian sector and do not catch up until the 23rd year of military service.

Figure 3

MILITARY TO CIVILIAN PAY COMPARISON OPTOMETRISTS CALENDAR YEAR 1980



The general conclusion which can be drawn from these two figures is that, for the majority of their careers, military veterinarians and optometrists receive substantially less income than do their civilian counterparts. If these two groups were not to receive Special Pay (currently \$100/mo), the disparity would be even greater. This, in turn, could have a negative impact on the recruitment and retention of optometrists and veterinarians.

V. FINDINGS.

A. Manning levels for optometrists and veterinarians are in the good to excellent range. This indicates that there is no need for compensation above the levels already provided.

B. Earning levels for military optometrists and veterinarians lag behind those of their civilian counterparts for the greater part of their military careers.

C. Any reduction in the Special Pay for Optometrists and Veterinarians would exacerbate the existing earnings gap.

VI. RECOMMENDATION. Maintain the Special Pay for Optometrists and Veterinarians in its present form.

References

1. Senate Report No. 305, p. 10, accompanying House Report 4495, 83rd Congress, 1st Session.
2. House Report No. 92-82, p. 19, accompanying House Report 6531, 92nd Congress, 1st Session.
3. Compensation Elements and Related Manpower Cost Items: Their Purpose and Legislative Background, Military Compensation Background Papers, Second Revised Edition, Office of the Secretary of Defense, July 1982. p. I.C.18.9.
4. Senate Report 95-400, p. 2 accompanying S. 1731, 95 Congress, 1st Session. SERE House Report No. 95-479, pp. 3-4, accompanying H.R. 8011, 95th Congress, 1st Session.
5. House Report No. 95-479, p. 4, accompanying H.R.8011, 95th Congress, 1st Session. See Senate Report No. 95-400, p. 3, accompanying S. 1731, 95th Congress, 1st Session.
6. House Report No. 96-450, p.51, accompanying House Report 5359, 96th Congress, 1st Session.
7. House Report No. 96-63, p.2, Hearing on House Report 6966, 96th Congress, 2nd Session.

8. Journal of the American Veterinary Medical Association, Vol 179, No 4, pp.382-384.
9. Letter to the 5th QRMC from the American Optometric Association, dated 20 Jan 1983.

LEGISLATIVE HISTORY OF SPECIAL PAY
FOR OPTOMETRISTS AND VETERINARIANS

1. Army - Navy - Public Health Service Officer Procurement Act of 1947 (Pub. L. No. 61-365, 61 Stat. 776) authorized a \$100 Special Monthly Pay for Regular Officers who were then commissioned in the medical or Dental Corps and for those who were so commissioned before Sept 1, 1952.
2. The Act of 9 September 1950 (Pub. L. No. 81-779, 64 Stat. 826) established the requirement for male Health Professionals under age 50 in the categories of Medicine, Dentistry, Osteopathy, Veterinary Medicine and Optometry to register under the Selective Service Act and made them subject to selected induction calls. It also extended the \$100 entitlement to Reserve Medical and Dental officers.
3. The Act of 25 June 1952 (Pub. L. No. 82-410, 66 Stat. 156) extended the special pay cut-off from 1 September 1952 to 1 July 1953.
4. The Act of 29 June 1953 (Pub. L. No. 83-84, 67 Stat. 86) extended the special pay cut-off from 1 July 1953 to 1 July 1955. It also made Veterinary Officers eligible for the special pay of \$100.
5. The Act of 30 June 1955 (Pub. L. No. 84-118, 69 Stat. 223) extended the special pay cut-off from 1 July 1955 to 1 July 1959.
6. The Act of 30 April 1956 (Pub. L. No. 84-497, 70 Stat. 119) continued Special Pay for Veterinarians at the monthly rate of \$100 but changed the amount for physicians and dentists to a graduated scale based on length of active service.
7. The Act of 23 March 1959, (Pub. L. No. 86-4, 73 Stat. 13) extended the special pay cut-off from 1 July 1959 to 1 July 1963.
8. The Act of 2 April 1963 (Pub. L. No. 88-2, Stat 4) extended the special pay cut-off from 1 July 63 to 1 July 1967.
9. The Act of 30 June 1967 (Pub. L. No. 90-40, 81 Stat. 100) extended the special pay cut-off from 1 July 1967 to 1 July 1971.
10. The Act of 28 September 1971 (Pub. L. No. 92-129, 85 Stat. 348) extended the special pay cut-off from 1 July 1971 to 1 July 1973. It also made optometrists eligible for the special pay of \$100.00 per month.
11. The Act of 19 July 1973 (Pub. L. No. 93-64, 87 Stat. 147) extended the special pay cut-off from 1 July 1973 to 1 July 1975.
12. The Act of 6 May 1974 (Pub. L. No. 93-273, 88 Stat. 94) extended the special pay cut-off from 1 July 1975 to 1 July 1977 for physicians and dentists but not for veterinarians and optometrists.

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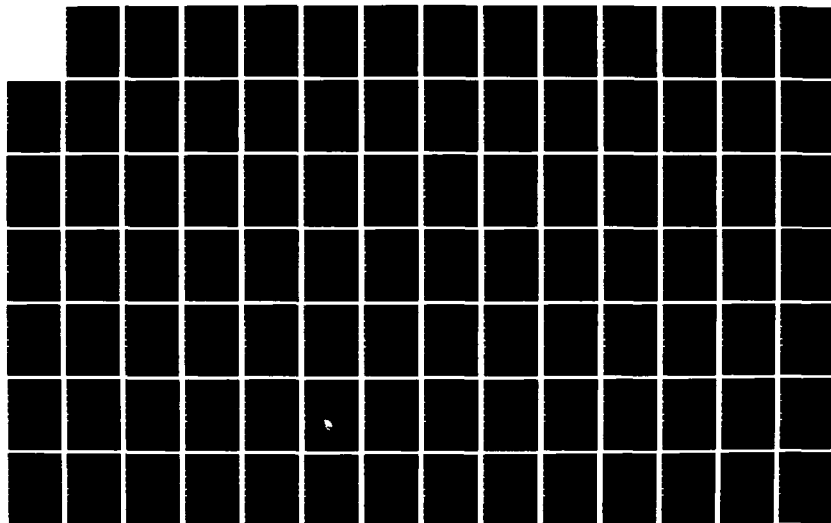
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VOLUME 3 SPECIAL AND INCENTIVE PAYS(U) OFFICE OF THE
SECRETARY OF DEFENSE WASHINGTON DC NOV 83

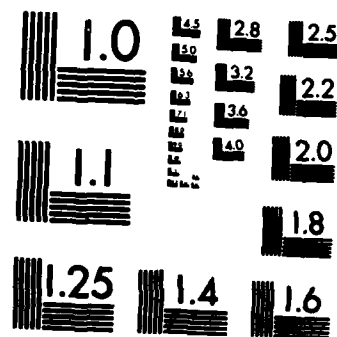
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13. The Act of 30 September 1977 (Pub. L. No. 95-114, 91 Stat. 1046-1047) extended the cut-off date for physicians and dentists from July 1977 to 30 September 1978. It also reinstituted the special pay of \$100 per month for optometrists and veterinarians.
14. The Department of Defense Appropriation Authorization Act of 1979 (Pub. L. No. 95-485, 92, Stat. 1619) extended the pay cut-off from 30 September 1978 to 30 September 1980.
15. The Uniformed Services Health Professionals Special Pay Act of 1980 (Pub. L. No. 96-284, 94 Stat. 587 et seq) made permanent the special pay of \$100 per month for veterinarians and optometrists.

SUMMARY OF RESPONSES

Special Pay for Optometrists and Veterinarians

Issues:

1. There is no need for compensation above the current levels provided.
2. The special pay for optometrists and veterinarians should be maintained in its present form.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Concurs with findings, but states that it is possible that manning difficulties could surface (for optometrists) in the future which would be cause additional compensation at that time.
Coast Guard	Defers judgment to the QPMC Staff.
PHS	Concurs with findings, but believes it may be necessary to provide additional compensation in the future in order to attract and retain veterinarians with highly specialized training because recruitment will be more difficult.
NOAA	Defers to judgment of QPMC Staff.
JCS	Concurs.

37 U.S.C. 314
SPECIAL PAY: QUALIFIED ENLISTED MEMBERS EXTENDING DUTY
AT DESIGNATED LOCATIONS OVERSEAS

OVERSEAS DUTY EXTENSION PAY

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OVERSEAS DUTY EXTENSION PAY

I. PURPOSE. To provide an incentive for enlisted personnel in certain skill specialties to extend their tours of duty overseas.

II. DATA SOURCES. The primary source of data for this paper was the Services in response to QPMC requests. The Office of Personnel Management also provided information.

III. HISTORICAL PERSPECTIVE. This special pay, referred to as Overseas Duty Extension Pay (ODEP), was first authorized on 23 December, 1980, by the Military Pay and Allowances Benefits Act of 1980. Implementation of the ODEP provisions of the Act by the Services took place between January and August, 1981. Under the provisions of 37 U.S.C. 314, enlisted personnel who agree to extend their overseas tour for a minimum of 12 months are authorized \$50 per month for the period of the extension. The Act also provided alternative incentives under 10 U.S.C. 705. Instead of the monetary incentive, a member may elect either a thirty day "rest and recuperative absence" or a fifteen day "rest and recuperative absence" and round-trip transportation, at government expense, between the overseas station and the nearest port in the U.S. The original House of Representatives Bill included an additional option which would have provided round trip transportation from the overseas station to the U.S. for the member and his dependents.¹ However, this provision was not supported by the Senate, as it was believed that it would tend to increase the number of dependents overseas at a time when the Senate felt a need to reduce that number.² The dependents' travel provision was deleted from the bill.

As stated in the House of Representatives report, the intent of these incentives is to "...assist in alleviating a problem of manning skills in which the majority of the skill requirements are in the overseas duty area."³

IV. METHODOLOGY. A comprehensive analysis of Overseas Duty Extension Pay would include an evaluation of its purpose (i.e. does the pay serve a useful and valid purpose for the Services), and an evaluation of the effectiveness of the rate of payment in meeting its intended purpose. However, the newness of ODEP precludes a thorough analysis.

The first portion of this paper will explore, to a limited extent, the usefulness of ODEP in meeting Service needs. A comparative analysis of extension rates for affected specialties before and after the implementation of ODEP is impracticable, because of the absence of required data prior to the pay's effective date. Another approach would be to observe changes in CONUS turn-around-time for specialties in Services that authorized ODEP by skill. While all DoD Services had begun using ODEP by the end of FY81, the first significant changes in turn-around-times will not result until those personnel who extended tours during FY82 rotate back to the CONUS during FY83 and are replaced by members

ending CONUS tours, thus affecting the turn-around-times for their specialties. Hence, this too, is not possible at present.

It is believed that the first opportunity to ascertain any measurable results of the program will be at the end of fiscal year 1983. Factors which may tend to obscure the impact of ODEP on average turn-around-time are changes in overseas manning levels, variances in tour length policy, and the impact of other Special and Incentive Pays on retention during the time period in question. Because data is not yet available by which to measure the impact of ODEP, only generalized cost and cost saving provisions of the pay will be addressed in the second section.

V. ANALYSIS.

A. USEFULNESS. Overseas Duty Extension Pay is currently used only by the DoD Services. Table 1 shows recipients of ODEP by Service along with costs by fiscal year. It should be noted that the table reflects solely those personnel selecting the \$50 per month option and associated costs and not the number of personnel extending for one of the other two incentives.

Table 1
ODEP Recipients and Costs (\$000) FY81-FY87 by Service*

<u>FY</u>		<u>ARMY</u>	<u>NAVY</u>	<u>A.F.</u>	<u>M.C.</u>	<u>TOTAL</u>
81	#	1,075	Not	23	152	1,250
	\$	\$ 645	Avail	\$ 14	\$ 91	\$ 750
82	#	1,560	1,901	1,784	649	5,894
	\$	\$ 935	\$1,141	\$1,070	\$ 389	\$ 3,535
83	#	2,500	3,166	2,132	1,133	8,931
	\$	\$1,500	\$1,900	\$1,279	\$ 680	\$ 5,359
84	#	2,500	4,603	2,450	1,133	\$10,686
	\$	\$1,500	\$2,762	\$1,470	\$ 680	\$ 6,412
85	#	2,500	2,167	2,450	1,133	8,250
	\$	\$1,500	\$1,300	\$1,470	\$ 680	\$ 4,950
86	#	2,500	2,167	2,450	1,133	8,250
	\$	\$1,500	\$1,300	\$1,470	\$ 680	\$ 4,950
87	#	2,500	2,167	2,450	1,133	8,250
	\$	\$1,500	\$1,300	\$1,470	\$ 680	\$ 4,950

*Number represents manyears of ODEP. Figures for FY83-FY87 are budget projections.

Table 2
ODEP Incentives Selected by DOD Service
FY82* (%)

<u>SERVICE</u>	<u>\$50/month</u>	<u>30 DAYS R&R</u>	<u>15 DAYS R&R AND TRANSPORTATION</u>
ARMY	57	36	7
NAVY	65	28	7
AIR FORCE	34	56	10
MARINE CORPS	29	42	29

*In some cases percentages were approximated or based upon data for periods slightly longer or slightly less than FY82.

The Army was the primary proponent of ODEP. They commenced their Overseas Extension Incentive Program (OEIP) in March, 1981 in an effort to increase unit readiness through decreased personnel turbulence and by providing longer turn-around-times in the Continental United States (CONUS), particularly for their career personnel in Space Imbalanced Military Occupational Specialties (SIMOS). The initial program authorized the extension incentive to members in 35 specialties. Currently, there are 130 specialties in the program which encompasses approximately 48,000 overseas positions. Eligible personnel also must meet the pay grade criteria. For example, the incentive eligibility may only be extended to one or two paygrades within the specialty (e.g. only E-5 infantrymen). Most specialties included in the program are repair personnel or mechanics specializing in various weapon systems, such as missiles and tanks or other heavy equipment.

The Army received 1,407 requests for tour extensions from a group of 5,690 eligible personnel during that portion of FY81 in which the program was in effect; this represented a 24.7% extension rate. For FY82, 2,747 extension requests were received from a total of 17,674 personnel completing overseas tours and eligible for the incentive, for a 15.5% volunteer rate. The Army is expecting a 16% voluntary extension rate for FY83. Accurate data documenting the voluntary extension rate for personnel prior to the incentives program is unavailable.

The Air Force implemented ODEP in August 1981. Their program currently encompasses over 13,400 overseas authorizations in 78 specialties, primarily communications specialists and linguists. The specialties included in the program vary from year to year based upon their standing in relation to the average CONUS turn-around-time for other space imbalanced specialties. The Air Force approved 1,784 requests for ODEP extensions of overseas tours in FY82 from approximately 13,000

eligibles, or an extension rate of 14 percent. Again, comparative data prior to the incentive program is not available.

The Navy authorizes ODEP for all personnel assigned to Type 3 (performed at overseas land based activities at locations where the prescribed DoD accompanied tour length is less than 36 months) and Type 4 (performed in commissioned vessels in an active status homeported overseas or in activities which operate away from their overseas homeport/base for extensive periods) duty. As of 30 September 1982, the Navy had approximately 38,000 overseas billets qualifying for ODEP. In FY82, 4,590 of 19,789 eligibles requested extensions overseas, or an extension rate of over 23%.

The Marine Corps pays ODEP to all military specialties serving in the Western Pacific and Guantanamo Bay, Cuba. Nearly 16,000 billets can qualify under the program. Extension data is not available.

ODEP provides a useful incentive to encourage enlisted personnel to extend overseas tours for all Services. For the Army and Air Force, with space imbalanced skills, overseas extensions may help to ease problems arising when personnel are ordered overseas after less than 24 months in CONUS. For the Navy, ODEP may ease difficulties arising when, for example, overseas tour lengths are shorter than the individual's normal sea/shore tour length and a sailor stationed afloat overseas must be transferred to a second ship in CONUS to complete his normal sea tour.

B. COST CONSIDERATIONS. A unique feature of ODEP is that, while a cost is incurred in paying the incentive, increased tour lengths generate financial savings for the Service in addition to the added personnel and unit stabilization benefits. Shown below is one method for estimating the permanent change of station (PCS) savings resulting from tour extensions.

Rotation of a member overseas requires two moves, one over and one back. Thus, the final cost, regardless of tour length, will be twice the average cost of an overseas move at either the with or without dependents rate. However, it is expected that over a given period of time, fewer moves will be required and less PCS costs incurred with longer tours. The average annual PCS cost of keeping a member on station overseas decreases as the tour length increases. This relationship can be shown by the following equation:

$$C_A = \frac{2M}{F}, \text{ where } C_A = \text{annual PCS cost,}$$

M = average cost of an overseas PCS move, and

F = tour length in years.

An approximation of the annual PCS savings resulting from a tour extension may be made using the following:

$$S_A = \frac{2M}{F_1} - \frac{2M}{F_2} \quad , \text{or}$$

$$S_A = \frac{2(F_2 - F_1)M}{F_1 F_2} \quad \text{where :}$$

S_A = annual PCS cost savings resulting from a tour extension

F_1 = original tour length and

F_2 = tour length after extension.

The total approximate cost savings resulting from an extension can then be estimated by multiplying the annual cost savings by the extended tour length. Table 3 shows the approximate savings resulting from one-year extensions of various length tours of duty.

Table 3
Estimated Cost Savings Resulting from Tour Extensions*

<u>ORIGINAL TOUR</u>	<u>EXTENSION</u>	<u>NEW TOUR LENGTH</u>	<u>ANNUAL SAVINGS</u>	<u>TOTAL SAVINGS</u>
12 Mos.	12 Mos.	24 Mos.	1M	2M
18 Mos.	12 Mos.	30 Mos.	.53M	1.33M
24 Mos.	12 Mos.	36 Mos.	.33M	1M
30 Mos.	12 Mos.	42 Mos.	.23M	.8M
36 Mos.	12 Mos.	48 Mos.	.17M	.67M
48 Mos.	12 Mos.	60 Mos.	.1M	.5M

*Savings expressed in terms of M, cost of average overseas PCS move.

It can be seen from Table 3 that the greatest potential cost savings result from extension of shorter tours where rapid rotation of personnel generates the greatest PCS Cost.

Utilizing a 1982 Air Force average enlisted (worldwide) PCS cost of \$5,231 (includes 2.3 dependents, automobile, and household goods), Table 4 shows estimated savings resulting from a 12 month extension of tours of various lengths.

Table 4
Estimated Savings Resulting from 12 Month Extensions

<u>TOUR LENGTHS</u> <u>ORIGINAL/EXTENDED</u>	<u>ANNUAL</u> <u>SAVINGS</u>	<u>TOTAL</u> <u>SAVINGS</u>
12/24 Mos.	\$5,231	\$10,462
18/30 Mos.	\$2,772	\$6,957
24/36 Mos.	\$1,726	\$5,231
30/42 Mos.	\$1,203	\$4,185
36/48 Mos.	\$ 889	\$3,505
48/60 Mos.	\$ 523	\$2,615

The cost of each PCS move will, of course, vary with lower costs for single members and higher costs for members with dependents. However, given the considerable expense of moving personnel, substantial savings may be realized through voluntary extensions.

The costs offsetting these savings will fluctuate depending upon the incentive selected by the member. The \$50 per month option results in an annual cost of \$600. Losing the services of an E-5 for 30 days could cost approximately \$1,400 (1/12 average BMC for E-5) and represents the bulk of the costs incurred under the 30 day R&R option. Current costs for the third incentive, 15 days R&R and round trip transportation, approximate \$1,730 for an E-5 in Korea and \$1,330 for an E-5 in Germany (1/24 average E-5 BMC plus twice Military Airlift Command fares of \$515 from Seoul, Korea to Oakland, CA and \$315 from Frankfurt, Germany to McGuire A.F.B., New Jersey).

Regardless of the incentive selected, ODEP, in the average case, is cost effective. The pay option provides the greatest cost savings. Admittedly, there may be cases when the cost of the incentive may exceed the cost savings. Also, the examples do not cover every element of cost which may be present, nor attempt to attribute cost savings to the added productivity generated by increased tour lengths. Other intangible benefits may also result, such as fewer reassignments over the course of a career (decreased personal expense), and greater family stability (perhaps helping to increase retention).

While ODEP can be considered a cost effective program, it is too early to measure the actual impact of the pay because of its recent implementation. However, the \$50/month ODEP option may lose its incentive value in contrast with the two other options whose worth (and cost) increase with growth in both pay and transportation/travel costs. Thus,

periodic adjustments to the \$50/month rate based upon increases in the Consumer Price Index (CPI) would seem reasonable to maintain a draw to this cost effective option.

C. CIVILIAN COMPARISON.

Several incentives are offered to Federal Civil Service personnel to encourage continued or repeat overseas tours. A home leave program allows the accrual of either 5, 10, or 15 extra days of leave per year (depending upon conditions). It may be taken after an initial qualifying two year tour abroad, in conjunction with a stateside visit from which the individual will be returning overseas.

A second incentive is round trip transportation at government expense from the overseas station to CONUS for the individual and dependents. This incentive is available to personnel agreeing to serve an additional tour overseas and can be taken in conjunction with the home leave incentive.

VI. FINDINGS.

A. ODEP serves a valid purpose for the Services, especially those having substantial overseas requirements for certain skills.

B. Collection and maintenance of extension and CONUS turn-around-time data for ODEP specialties by the Services will facilitate a future review of the effectiveness of ODEP after stabilization of Service programs.

C. The recent implementation of this pay, coupled with a lack of prior data on overseas extensions, precludes specific findings concerning the current rates. Adjustment of the \$50/month rate may be appropriate; however, increases in the rate should be subsequent to a determination of the effectiveness of the pay.

VII. RECOMMENDATIONS.

A. Retain Overseas Duty Extension Pay (ODEP).

B. Services using ODEP should collect and maintain extension and turn-around-time data to facilitate a later review of this pay's effectiveness.

References

1. House of Representatives Report No. 96-1230 accompanying H.R. 7626, 96th Congress, 2nd Session, August 19, 1980, p. 7.
2. Senate Report No. 96-1051 accompanying H.R. 7626, 96th Congress, 2nd Session, December 3, 1980, p.6.
3. House of Representatives Report No. 96-1230, pp. 6-7.

SUMMARY OF RESPONSES

Overseas Duty Extension Pay

Issues:

1. ODEP should be retained.
2. The recent implementation of the pay precludes specific findings concerning the appropriateness of the current rates.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Concurs.
Coast Guard	Concurs.
Public Health Service	Concurs.
NOAA Corps	Concurs.
JCS	Concurs.

37 U.S.C. 302

SPECIAL PAY: MEDICAL OFFICERS OF THE ARMED FORCES

VARIABLE SPECIAL PAY
ADDITIONAL SPECIAL PAY
BOARD CERTIFICATION PAY
INCENTIVE SPECIAL PAY

MEDICAL OFFICER PAYS

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SPECIAL PAY FOR MEDICAL OFFICERS OF THE ARMED FORCES

I. **PURPOSE.** To provide additional pay for officers of the Army or Navy Medical Corps or officers of the Air Force or Public Health Service who are designated as Medical Officers, thereby increasing the ability of the Uniformed Services to attract and retain officer volunteers in the disciplines of Medicine or Osteopathy.

II. **DATA SOURCES.** Data were provided primarily by the Service Staffs of the Army, Navy, Air Force, Public Health Service and the Defense Manpower Data Center. Additional background field interviews were conducted at Fort Bragg, NC, Fort Jackson, SC, Portsmouth Naval Regional Medical Center, Portsmouth VA, and the National Naval Medical Center, Bethesda, MD.

III. **HISTORICAL PERSPECTIVE.** The origin of the Special Pay for Medical Officers can be traced to the Army-Navy-Public Health Service Medical Officer Procurement Act of 1947 which established a precedent by authorizing a payment of \$100 per month above normal pay to physicians and dentists. While the stated intention of this Act was as summarized in paragraph I above, Congress also acknowledged that the pay was provided as compensation for the additional money spent on education and income lost while in medical or dental school.¹

From its inception the extra pay for physicians and dentists (later including optometrists and veterinarians) had a cut off date or time constraint imposed on it. The cut off date was defined as the date after which persons being accessed for the medical skill would not be authorized to draw the additional pay. For example, when the pay was first authorized for physicians and dentists in 1947 the law stated that all those regular officers commissioned before 1 September 1952 would be authorized to draw the pay. By default anyone commissioned after that "cut-off date" would not be authorized to draw the pay, while those commissioned before that date would continue to draw the pay. Repeatedly, Congress extended the cut-off date on or about the time it was due to expire. (A chronological list of the legislative extensions and pertinent Congressional actions associated with the Special Pay for Medical Officers is at Appendix A.)

This special pay was first modified by the Career Compensation Act of 1949 which, at the recommendation of the "Hook Commission," barred medical interns from receiving Special Pay.² The second modification occurred with the Act of 30 April 1956, which changed the pay from a flat rate of \$100 per month to one based on length of medical service as depicted in Table 1.

Table 1
Special Pay for Medical Officers (1956-1963)

<u>Amount</u>	<u>Length of Medical Service</u>
\$100/Month	Less than 2 years
\$150/Month	More than 2 years and less than 6 years
\$200/Month	More than 6 years and less than 10 years
\$250/Month	More than 10 years

In addition, this Act instituted the practice of awarding medical officers four years of constructive credit for promotion and pay purposes upon commencement of active duty. The net result was to raise dramatically the overall amount of basic pay in order to reduce the high rate of losses.³ The Uniformed Services Pay Act of 1963 raised the Special Pay rates for Medical Officers with between 6 and 10 years of active duty from \$200 to \$250 a month and the rate for those over 10 years active duty from \$250 to \$350. Table 2 shows the monthly rates of Special Pay for Medical Officers as they existed from the passage of this Act until 1974.

Table 2
Special Pay for Medical Officers (1963-1974)

<u>Amount</u>	<u>Length of Medical Service</u>
\$100/Month	Less than 2 years
\$150/Month	More than 2 years and less than 6 years
\$250/Month	More than 6 years and less than 10 years
\$350/Month	More than 10 years

In 1974 the Special Pay for Medical Officers was once again modified. This time the rates were changed from those shown in Table 2 to those wherein all physicians with less than 2 years medical service received \$100 per month while those with 2 or more years of service received \$350 per month. These rates remained in effect until the passage of the Uniformed Services Health Professionals Special Pay act of 1980, at which time they were phased out and replaced by a new form of special pay. Table 3 reflects the number of personnel and costs associated with the Special Pay for Medical Officers prior to July 1980.

Table 3
Special Pay for Medical Officers Personnel and Costs

<u>Fiscal Year</u>	<u>Total Personnel</u>	<u>Cost (\$000)</u>
1972	13,713	\$26,882
1973	13,730	26,915
1974	12,195	24,756
1975	11,515	32,764
1976	11,221	34,682
1977	11,107	33,422
1978	10,723	32,529
1979	10,968	33,991
1980 (Sept-Jun)	Not Available	26,869

Additional compensation in the form of Continuation Pay for Medical Officers originated with the Act of December 16, 1967. This Act provided for the payment of up to four months additional basic pay to a medical or dental officer, if that officer:

- is serving on active duty in a critical specialty designated by the Secretary of Defense.
- has completed his initial active-duty obligation.
- executes an active duty agreement for at least one additional year.

While payments of Continuation Pay to physicians began immediately, it was not until late 1972 that dentists also received the pay. This delay was based on the rationale that Continuation Pay should be used in a manner similar to the reenlistment bonus for enlisted personnel and the belief that the retention problem associated with dentists (prior to 1972) was not sufficiently severe to warrant the payment of Continuation Pay.⁴ Continuation Pay for Medical officers was terminated in 1974 by the same Congressional action that made the previously mentioned rate modification to the Special Pay for Medical Officers. Table 4 shows the number of personnel and associated costs for Continuation Pay. It should be noted that a small number of personnel continued to draw this pay after 1974 through 1980. This "saved pay" measure was enacted to protect a small group of officers, who because of the timing of their residency training, would have been prevented from receiving Continuation Pay or its substitution.

Table 4
Continuation Pay for Medical Officers
Personnel and Costs

<u>Fiscal Year</u>	<u>Total Personnel</u>	<u>Cost (\$000)</u>
1972	3,234	\$17,492
1973	3,238	19,202
1974	2,905	17,537
1975	310	2,717
1976	440	4,176
1977	*	*
1978	206	1,393
1979	141	1,010
1980	*	432

*Not available

The substitution for Continuation Pay for Medical Officers was Variable Incentive Pay (VIP). This new method authorized the payment of the various amounts, as depicted in Table 5, based upon the number of years of active duty agreement, if the medical officer was:

- below the grade of 0-7;
- in a critical speciality;
- not serving in an initial active duty obligation of four years or less or the first four years of an initial obligation of more than four years; and
- not undergoing intern or initial residency training.

Table 6 shows the number of personnel and associated costs for VIP.

Table 5
Variable Incentive Pay for Medical Officers (1974-1980)

<u>Years of Service (including constructive service credit)</u>	<u>Length of Active Duty Agreement</u>			
	<u>1 Year</u>	<u>2 Years</u>	<u>3 Years</u>	<u>4 Years</u>
4 through 13	\$12,000	\$12,000	\$13,000	\$13,000
14 through 19	11,500	12,000	12,500	13,000
20 through 25	11,000	11,300	11,600	12,000
26 or more	10,000	10,300	10,600	11,000
Obligated officers	9,000	9,000	9,000	9,000

Note: An obligated officer was one who had an unserved nondisqualifying active duty obligation resulting from participation in military-funded medical training of one year or more.

Table 6
Variable Incentive Pay for Medical Officers (VIP)
Personnel and Costs

<u>Fiscal Year</u>	<u>Total Personnel</u>	<u>Cost (\$000)</u>
1975	3,950	\$44,519
1976	4,748	54,421
1977	5,433	64,425
1978	5,634	66,745
1979	5,744	68,628
1980	Not Available	36,215

NOTE: VIP was phased out in 1980.

With the passage of The Uniformed Service Health Professional Act of 1980, VIP, like the Special Pay for Medical Officers, was replaced with the new Special Pay for Medical Officers of the Armed Forces. This new Special Pay which is the system in effect today, consists of four specific types that, while separate in nature, are inter-related. They are Variable Special Pay, Additional Special Pay, Board Certification Pay and Incentive Special Pay.

A. VARIABLE SPECIAL PAY. Except for interns who receive \$1,200 per year and general officers who receive \$1,000 per year, Variable Special Pay (VSP) is received by all Medical Officers in the amounts shown in Table 7. VSP is paid on a monthly basis. Creditable service is computed by adding:

- all periods which the officer spent in medical internship or residency training during which the officer was not on active duty; and
- all periods of active service in the Medical Corps of the Army or Navy, as an officer of the Air Force designated as a Medical Officer, or as a Medical Officer of the Public Health Service.

Table 7
Variable Special Pay Rates

<u>Years of Creditable Service</u>	<u>Annual Variable Special Pay</u>
Less than 6	\$ 5,000
6 but less than 8	10,000
8 but less than 10	9,500
10 but less than 12	9,000
12 but less than 14	8,000
14 but less than 18	7,000
18 but less than 22	6,000
Over 22	5,000

B. **ADDITIONAL SPECIAL PAY.** For agreeing to remain on active duty for one more year, Medical Officers receive Additional Special Pay (ASP) in the amount of \$9,000 per year if they have less than 10 years of service, or in the amount of \$10,000 if they have 10 or more years of service. ASP is paid annually.

C. **BOARD CERTIFICATION PAY.** Board Certification Pay (BCP) is paid to all Medical Officers who are authorized VSP and are board certified in a medical specialty. BCP is paid on a monthly basis at the rates found in Table 8.

Table 8
Board Certification Pay Rates

<u>Years of Creditable Service</u>	<u>Annual Pay for Board Certification</u>
Less than 10	\$ 2,000
10 but less than 12	2,500
12 but less than 14	3,000
14 but less than 18	4,000
Over 18	5,000

D. **INCENTIVE SPECIAL PAY.** Incentive Special Pay (ISP) is paid to Medical Officers in amounts up to \$8,000 per year. These officers are authorized to receive ISP if they are:

- serving in the pay grade of O-6 or below;
- not undergoing internship or initial residency training;
- agree to remain on active duty for one additional year; and
- fall into a category which the individual Services have indicated as appropriate to qualify for ISP.

Categories which may be used by the Services to authorize ISP are:

- qualified in a specialty in critical supply;
- assigned to a position where he or she represents the sole professional resource in his or her category;
- assigned to a position in which opportunities are limited for professional growth because of the nature of practice of the assignment;
- isolated from medical education opportunities;
- lacking any opportunities to interact with the medical community; or
- affected by other similar factors.

The total amount of ISP paid cannot exceed 6 percent of the total amount of all Special Pay for Medical Officers. ISP is paid on an annual basis.

Table 9 shows the number of personnel and associated costs for Special Pay for Medical Officers of the Armed Forces. It depicts the four categories previously mentioned, by Service, for fiscal years 81 through 84.

Table 9
Special Pay for Medical Officers of the Armed Services
Personnel and Costs by Uniformed Service

FY	SERVICE	VSP		MASP		BCP		ISP ¹		TOTAL
		AVG. PERS	COST (\$000)	AVG. PERS	COST (\$000)	AVG. PERS	COST (\$000)	AVG. PERS	COST (\$000)	COST (\$000)
81 ²	Army		29,614		30,021		5,415		4,155	69,205
	Navy		21,795		21,884		3,659		2,989	50,327
	Air Force		22,847		29,120		3,625		3,105	58,697
	Pub Health		17,072		24,126		2,769		0	43,967
	Serv TOTAL		91,328		105,151		15,468		10,249	222,196
82	Army	4,922	31,313	3,401	31,607	2,028	5,395	914	4,361	72,676
	Navy	3,614	22,875	2,747	25,532	1,278	3,796	679	3,194	55,397
	Air Force	3,560	23,603	2,832	26,139	1,495	3,815	647	3,403	56,960
	Pub Health	2,282	14,676	2,003	18,576	1,056	2,861	0	0	36,113
	Serv TOTAL	14,378	92,467	10,983	101,854	5,857	15,867	2,240	10,958	221,146
83	Army	5,071	32,756	3,504	32,564	2,089	5,555	1,088	4,524	75,399
	Navy	3,690	23,526	2,763	25,717	1,270	3,672	718	3,378	56,293
	Air Force	3,657	24,268	2,836	26,185	1,545	3,960	736	3,460	57,873
	Pub Health	1,980	13,294	1,762	16,654	1,006	2,803	0	0	32,755
	Serv TOTAL	14,398	94,844	10,865	101,120	5,910	15,990	2,542	11,362	222,320
84 ³	Army	5,290	34,156	3,655	33,967	2,179	5,792	1,135	4,718	78,633
	Navy	3,958	26,099	2,911	27,130	1,285	3,721	361	3,048	59,998
	Air Force	3,727	24,736	2,895	26,715	1,585	4,075	751	3,530	59,056
	Pub Health	0	0	0	0	0	0	0	0	0
	Serv TOTAL	12,975	84,991	9,461	87,812	5,049	13,588	2,247	11,296	197,687

- TOTAL
1. PHS does not pay ISP
 2. Avg. personnel figures for FY 1981 not available
 3. PHS data unknown

A summary of the general tenets of the Special Pay for Medical Officers is at Appendix B. This pay is codified under 37 U.S.C 302.

IV. METHODOLOGY. The central question that should be answered by the analysis of the Special Pay for Medical Officers of the Armed Force is "How well does this pay attract and retain physicians?". There are two major factors, however, which prevent the development of a fully substantiated answer to this question.

First, the pay in its present form has only been in existence since July of 1980. This allows for only two complete fiscal years (FY81 and FY82) of data upon which to base the analysis. To pass judgment about the effectiveness of the pay with this small amount of data is extremely difficult.

The second factor which impinges upon the analysis is the manner in which the individual Services maintain their personnel data. Of particular interest is the retention or continuation rate of Medical Officers after they have completed their initial and any additional obligation for residency or similar training. Because of the fact that there are several different accession programs (with varying amounts of initial obligation) and that the obligated time for residency training could vary substantially, a simple assumption of when Medical Officers complete their active duty obligation (such as might be made about aviators) cannot be made with any degree of accuracy. Availability of good data would necessitate the Services tracking each individual Medical Officer and recording when they have completed their individual obligations. The Services do not keep this information in a form which can be used to compute retention or continuation after all obligated service has been completed.

In view of these factors, the analysis of the Special Pay for Medical Officers will be somewhat limited. Notwithstanding these limitations, the analysis will be presented in three sections. The first section will provide a discussion of manning data. The second section will compare different types of loss patterns and discuss general retention rates. In section three, the types and amounts of Special Pay received by individuals in the specific Services will be reviewed and salary comparison between civilian and military will be made.

V. ANALYSIS.

A. MANNING. Table 10 shows manning data for Medical Officers from FY79 through FY82. The data appears to demonstrate that Medical Officers have not been seriously undermanned in recent years and depicts a current manning situation that is generally favorable. However, since some Services set their authorizations at what they believed to be achievable levels rather than actual needs, it is difficult to determine whether these manning levels accurately reflect the Services success in this area. The 14% reduction in budget authorization and the 20% reduction in numbers numbers assigned for the Public Health Service is the direct result of PHS closing of eight hospitals and several outpatient clinics in calendar year 1981.

The Budget Authorization for the Army increased approximately 16 percent during the period depicted in the table. During the period immediately following the Vietnam Conflict and the end of the draft, attraction and retention of physicians in the Army was extremely low. Rather than leave vacant the authorization allocation for physicians whom they were not able to attract or retain, the Army transferred these authorizations to other medical skills which could be used such as "Physician Extenders" (Physician's Assistants, Nurse Practitioners, etc.) As the new programs like the Armed Forces Health Professions Scholarships and the Uniform Services University of the Health Sciences have begun to generate larger numbers of physician accessions, the Army has gradually decreased its Physician Extenders while increasing its authorization base to accommodate the greater number of physicians.

According to the Army, the seemingly continuous condition of over-manning is a function of an underestimation of the success of the scholarships and university programs in conjunction with the new Special Pay for Medical Officers.

Table 10
Manning Data - Physicians

<u>Service</u>	<u>FY79</u>		<u>FY80</u>		<u>FY81</u>		<u>FY82</u>	
	<u>Auth</u>	<u>Assign</u>	<u>Auth</u>	<u>Assign</u>	<u>Auth</u>	<u>Assign</u>	<u>Auth</u>	<u>Assign</u>
Army	4,201	4,385	4,402	4,707	4,554	4,900	4,905	4,957
Navy	3,627	3,588	3,600	3,632	3,624	3,553	3,693	3,693
Air Force	3,526	3,310	3,542	3,441	3,602	3,589	3,692	3,671
Public Health Service	*	*	*	*	2,500	2,502	2,186	2,015
Total	11,354	11,283	11,544	11,780	14,280	14,544	14,476	14,336

*PHS data not available.

B. LOSS AND RETENTION CONSIDERATIONS. Figure 1 depicts the cumulative percentage losses for the separate categories of all Health Professionals (for the purpose of this analysis this excludes nurses but includes dentists and allied medical fields), all DoD officers, and physicians over a 30 year career. These rates were computed using aggregate loss data spanning the period of FY79 through FY82. Accordingly, they represent the average cumulative losses for those fiscal years and are useful in judging the likelihood of individuals to leave the Service at different points in a career. It also shows what the Services have indicated as their combined desired cumulative loss rate for physicians.

The cumulative losses of physicians is generally less than those of "all health professionals" up to the 7th year of service. However, from the 7th through the 12th year of service, the rate of loss for physicians exceeds all groups except the desired rate which it begins to approximate about the 15th year of service.

Figure 1

COMPARATIVE CUMULATIVE LOSS RATES

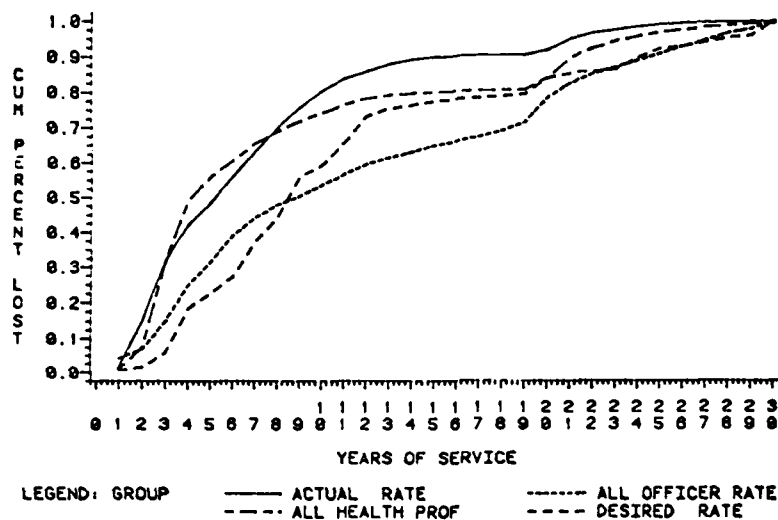


Figure 2 shows a comparison of cumulative loss rates for two years before and two years after the implementation of the Uniformed Services Health Professional Special Pay Act of 1980. It is clear from this figure that the loss rates in the initial years have declined since the passage and implementation of the Act. This fact is borne out by Table 11 which depicts an overall increase in retention for all of DoD of 3.23%. The largest portion of this increase has occurred in years of service 0 through 10.

Figure 2

MEDICAL OFFICER CUMULATIVE LOSS RATES
BEFORE AND AFTER 1980 USHPSP ACT

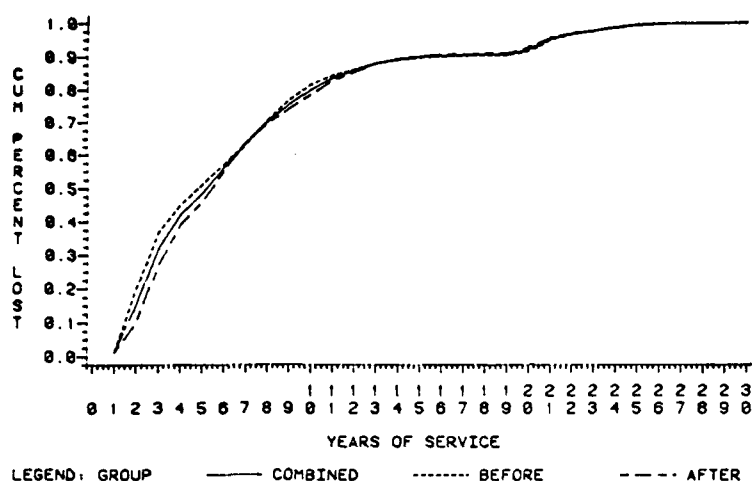


Table 11
Comparative Retention Rates by Service

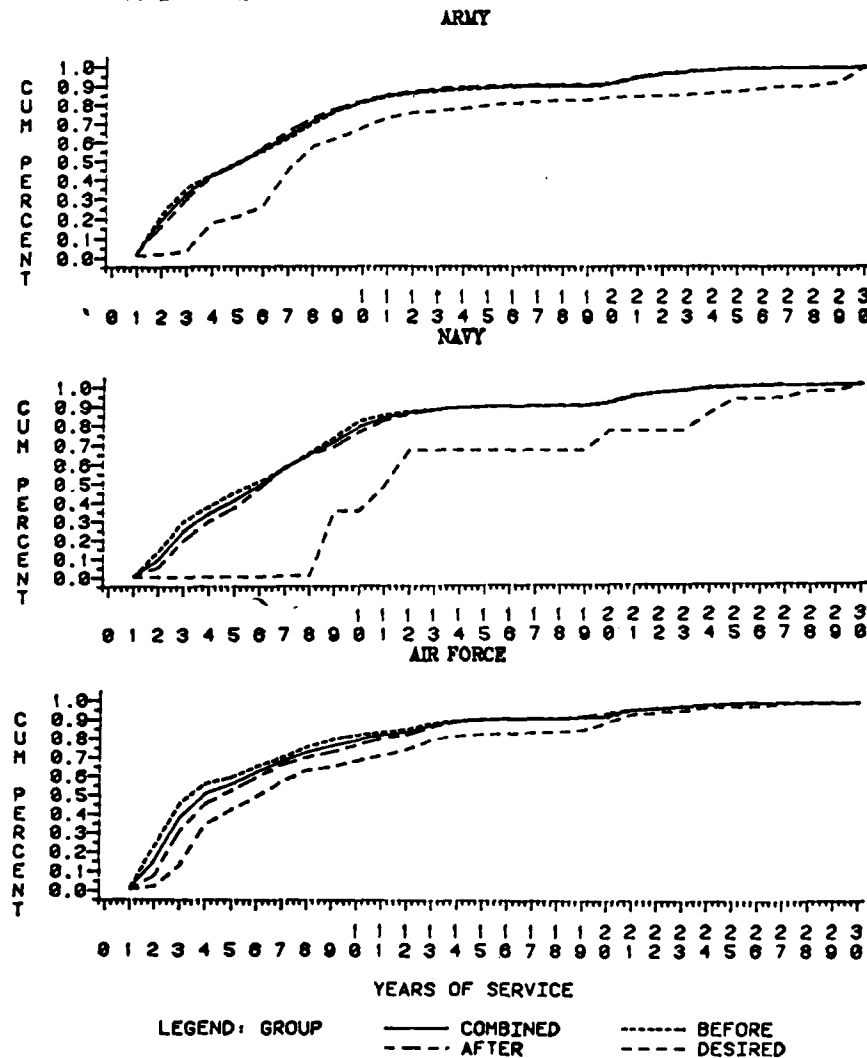
Years of Service	ARMY		NAVY		AIR FORCE		ALL DOD	
	FY 79	FY 82	FY 79	FY 82	FY 79	FY 82	FY 79	FY 82
0 - 5	83.60	89.62	88.70	98.17	99.05	89.96	89.57	91.37
5 - 10	84.27	87.25	77.46	78.96	70.95	86.06	78.09	84.04
10 - 15	88.14	93.08	87.68	86.57	85.90	89.79	87.46	90.22
15 - 20	96.04	95.99	95.90	94.54	96.14	94.93	96.03	95.27
20 - 25	75.92	77.84	74.85	71.43	65.87	75.22	72.95	74.94
25 - 30	68.29	74.47	66.66	74.29	55.55	72.41	65.00	74.77
Overall	84.92	89.31	84.29	86.56	85.93	88.42	85.12	88.34

Note: All Figures are percentage COHORT style retention rates.

Figure 3 shows the individual cumulative loss patterns for the Army, Navy and Air Force, respectively. Of the three Services the Air Force appears to have registered the largest decrease in cumulative losses. It also appears to be the closest to achieving its desired loss pattern.

Figure 3

MEDICAL OFFICER CUMULATIVE LOSS RATES BEFORE AND AFTER 1980 USHPSP ACT



C. PAY CONSIDERATIONS. Table 12 shows the percentage of physicians receiving each combination of Special Pays for each Service. The differences among the Services lie in the philosophical and actual approach each pursues in managing its Medical Officers.

1. Army. The percentage of physicians receiving only Variable Special Pay (VSP) is greater than in either of the other Services. This is because the Army attempts to send more of its physician accessions directly through military internship and residency training. While the individuals are in these programs, the only type of pay they can receive is VSP.

2. Navy. The Navy's approach is to send their physician accessions through military internship and then assign them to work as General Medical Officers for a period of time, prior to beginning residency training. During the period after they have completed internship, but have not yet begun residency training, these individuals are authorized Additional Special Pay (ASP) and VSP. This accounts for the high percentage of Navy physicians receiving only VSP and ASP. The higher percentage of personnel receiving only VSP and Board Certification Pay (BCP) is an indication that during this period of time (1982) the Navy suffered the highest loss of physicians among the Services. This observation is based on the fact that, if a physician is receiving BCP he is clearly eligible for ASP. Inasmuch as ASP incurs an additional obligation of one year, failure to accept the pay is a strong indicator of an intent to separate from the Service. This is further substantiated by the fact that during FY82 the Navy had the lowest retention rate for physicians of the three Armed Services.

It should be noted that the extremely low percentage of Navy physicians receiving pay in which Incentive Special Pay is an element of the combination is a direct result of the administrative delay the Navy imposed on the awarding of this pay during the latter part of 1982.

3. Air Force. The Air Force has the lowest percentage of personnel receiving only VSP. This is because the Air Force defers a large number of its accessions to permit them to obtain their internship and residency training in the civilian sector. By doing this, it is assured that a greater number of physicians will enter the Air Force with advanced training. This also results in their to being eligible for the other combinations of pays earlier in a career.

Table 12
Medical Officer Special Pay Combinations
Calendar Year 1982

<u>Pay Combinations</u>	<u>Percent of Physicians</u>		
	<u>Army</u>	<u>Navy</u>	<u>Air Force</u>
VSP	31.15%	24.21%	20.09%
VSP + ASP	21.24	36.15	29.21
VSP + BCP	1.63	4.11	1.15
VSP + ISP	1.34	.07	.13
VSP + ASP + BCP	28.61	34.61	30.26
VSP + BCP + ISP	1.96	.13	.02
VSP + ASP + ISP	4.59	.23	7.91
VSP + ASP + BCP + ISP	9.55	.44	11.19
TOTAL*	100.07%	99.95%	99.96%

*Totals may not equal 100 due to rounding

Table 13 shows the comparative amounts of Special Pay paid to physicians by Service. In an attempt to provide some degree of detail this information has been displayed in intervals of 5 years of service.

It is clear that there are dramatic differences in the mean and median payment of the Special Pay among the Services. This is in large part a function of the previously described philosophical differences of personnel management which the individual Services impose upon their physician populations. The Navy's mean and median amount are somewhat depressed by the absence of ISP in calendar year 1982 as mentioned earlier.

Table 13
Comparative Special Pay Amounts by Service
Calendar Year 1982

<u>Years of Service</u>	<u>Army</u>		<u>Navy</u>		<u>Air Force</u>		<u>All DoD</u>	
	<u>Mean</u>	<u>Median</u>	<u>Mean</u>	<u>Median</u>	<u>Mean</u>	<u>Median</u>	<u>Mean</u>	<u>Median</u>
0-5	\$2229	\$ 700	\$3459	\$ 700	\$12382	\$14000	\$9754	\$11500
5-10	11745	12600	10946	12100	17120	18500	12553	14000
10-15	18600	20250	15421	18500	19969	21000	17686	19200
15-20	21484	22900	18033	21000	22215	21500	20339	21000
20-25	23668	22900	19190	21000	21391	21000	21636	21000
25-30	22475	22800	17783	20000	19308	20000	20107	21000
OVERALL	15152	16100	13263	14000	15577	16000	14689	15500

Table 14 shows a comparison between the mean income of civilian physicians and military physicians by selected specialty for calendar year 1982. The civilian data is the product of the 1983 American Medical Association Socioeconomic Monitoring System Core Study. The mean civilian income figures were derived from a representative sample of all non-federal, patient-care medical doctors. They represent the income from the practice of medicine minus tax deductible professional expenses, but before payment of income taxes.⁶

Using 1982 individual finance record data, obtained from the three Armed Services, mean incomes were computed for two different sub-populations of Medical Officers. The first sub-population encompassed all physicians who received all four of the Special Pay subelements (VSP, ASP, BCP and ISP) and was found to be \$67,650 per year. The second sub-population included all physicians receiving all of the Special Pay sub-elements except ISP (VSP, ASP and BCP) and was found to be \$58,100 per year. To these two numbers was added the FY82 mean tax advantage for all military officers in the grade of O-3 to O-6 (\$5,300). This resulted in the mean military incomes displayed in Table 14. The lower of the two was used for comparison where it was found that none of the Services had paid ISP to physicians in that specialty. The higher mean was used for those specialties for which at least one Service had paid ISP. The result of this comparison reveals that even after the applications of the Special Pays, the average military physician income lags behind that of civilian physicians by a substantial amount.

Table 14
Physician Income Comparison
Civilian to Military
1982

<u>Specialty</u>	<u>Mean Civilian Income</u>	<u>Mean Military Income</u>	<u>Difference in Means</u>
General & Family Practice	\$ 71,900	\$ 63,400	\$ 8,500
Internal Medicine	86,800	72,950	13,850
Surgery	130,000	72,950	57,050
Pediatrics	70,300	63,400	6,900
Obstetrics/Gynecology	115,800	72,950	42,850
Radiology	136,800	72,950	63,850
Psychiatry	76,500	63,400	13,100
Anesthesiology	131,400	72,950	58,460

A number of foreign countries have found it necessary to pay their Medical Officers an additional stipend above that which is paid non-Medical Officers. In fact, recently when the Government Accounting Office surveyed the five countries of Australia, Canada, the United Kingdom, France and West Germany, (countries having strong cultural and ethnic ties to our own), it found that they all provided extra compensation to their physicians.⁵ Canada, the country which probably has economic conditions and a standard of living most similar to our own, provides to its military physicians an approximate increase in compensation of 35 percent. By way of comparison, when based upon an approximate mean total income and the mean amount of Special Pay, U.S. military physicians received additional compensation of approximately 30 percent in 1982.

D. OTHER CONSIDERATIONS. In attempting to measure the impact of the Special Pay for Medical Officers on retention, it was desirable to compare the difference in gross amount of money spent (adjusted to present dollars) against the change in retention rate before and after the Uniform Services Health Professionals Oct of 1980. Upon making this comparison, it was found that with the increased amount of dollars spent there was a corresponding increase in retention. However, to draw the conclusion that Special Pay was the driving force in this retention increase would not necessarily be correct. This is because during the same period of time that the new Special Pay for Medical Officer had taken effect, several other factors were likely impacting retention as well. These included such factors as the the pay raises of FY81 and FY82 and the effects of Armed Forces Health Professional Scholarships and Uniformed Services University of Health Sciences. As mentioned previously, the true effect of the Special Pay for Medical Officers can only be truly measured when the Services begin to identify the point at which individual physicians complete their obligatory service.

V. FINDINGS.

A. Manpower indicators for physicians have shown some improvement since the implementation of the Special Pay for Medical Officers.

B. A clear determination as to the specific long-term effect the Special Pay has had on the Medical Officer community can not be made because:

1. insufficient time has elapsed since its implementation;
2. the Services do not keep the data in a manner conducive to determining the full effectiveness of the pay; and
3. many other factors could have impacted on the attraction and retention problem thus masking the effect of the pay.

C. A comparison of civilian and military incomes for selected specialties shows that the military physicians' income is significantly below that in the civilian sector.

VI. RECOMMENDATIONS.

A. The current Special Pay for Medical Officers structure should be retained.

B. The Services should maintain their data in such a manner that retention rates for physicians, after completion of obligations, can be computed.

References

1. Senate Report No. 608, p. 4, accompanying S. 1661, 80th Congress, 1st Session.
2. Career Compensation for the Uniformed Services, "A Report and Recommendation for the Secretary of Defense by the Advisory Commission on Service Pay," December, 1948, p. 29.
3. House Report No. 1806, pp. 2, 4, 6, accompanying H. R. 9428, 84th Congress, 1st Session.
4. Senate Report No. 808, pp. 10-11, accompanying H.R. 13510, 90th Congress, 1st Session.
5. Report by the General Accounting Office, "Preliminary Analysis of Military Compensation Systems in the United States and Five Other Countries," December 31, 1981, pp. 18-53.
6. Socioeconomic Monitoring System Core Study, American Medical Association, 1982.

LEGISLATIVE HISTORY OF SPECIAL PAY FOR
MEDICAL OFFICERS OF THE ARMED SERVICES

1. Army - Navy - Public Health Service Officer Procurement Act of 1947 (Pub. L. No. 61-365, 61 Stat. 776) authorized a \$100 Special Monthly Pay for Regular Officers who were then commissioned in the medical or Dental Corps and for those who were so commissioned before Sept 1, 1952.
2. The Act of 9 September 1950 (Pub. L. No. 81-779, 64 Stat. 826) established the requirement for male Health Professionals under age 50 in the categories of Medicine, Dentistry, Osteopathy, Veterinary Medicine and Optometry to register under the Selective Service Act and made them subject to selected induction calls. It also extended the \$100 entitlement to Reserve Medical and Dental officers.
3. The Act of 25 June 1952 (Pub. L. No. 82-410, 66 Stat. 156) extended the special pay cut-off from 1 September 1952 to 1 July 1953.
4. The Act of 29 June 1953 (Pub. L. No. 83-84, 67 Stat. 86) extended the special pay cut-off from 1 July 1953 to 1 July 1955. It also made Veterinary Officers eligible for the Special Pay of \$100.
5. The Act of 30 June 1955 (Pub. L. No. 84-118, 69 Stat. 223) extended the special pay cut-off from 1 July 1955 to 1 July 1959.
6. The Act of 30 June 1955 (Pub. L. No. 84-497, 70 Stat. 119) continued special pay for Veterinarians at the monthly rate of \$100 but changed the amount for Physicians and Dentist to a graduated scale based on length of active service. In addition, Medical and Dental Officers were awarded 4 years of constructive credit for pay and promotion purposes.
7. The Act of 23 March 1959, (Pub. L. No. 86-4, 73 Stat. 13) extended the special pay cut-off from 1 July 1959 to 1 July 1963.
8. The Act of 2 April 1963 (Pub. L. No. 88-2, Stat 4) extended the special pay cut-off from 1 July 1963 to 1 July 1967.
9. The Unformed Services Pay Act of 1963 (Pub. L. No. 88-132, 77 Stat. 210) raised the monthly rate of special pay for Dentists.
10. The Act of 30 June 1967 (Pub. L. No. 90-40, 81 Stat. 100) extended the special pay cut-off from 1 July 1967 to 1 July 1971.
11. The Act of 16 December 1967 (Pub. L. No. 90-207, 81 Stat. 649) instituted a Continuation Pay of up to four months additional basic pay for Physicians and Dentists.

12. The Act of 18 October 1968 (Pub. L. No. 90-603, 82 Stat. 1187) made minor modifications to the continuation pay law, thereby insuring eligibility at the completion of an individual's initial obligation.
13. The Act of 28 September 1971 (Pub. L. No. 92-129, 85 Stat. 348) extended the special pay cut-off from 1 July 1971 to 1 July 1973. It also made optometrists eligible for the special pay of \$100.00 per month.
14. The Act of 19 July 1973 (Pub. L. No. 93-64, 87 Stat. 147) extended the special pay cut-off from 1 July 1973 to 1 July 1975.
15. The Act of 6 May 1974 (Pub. L. No. 93-273, 88 Stat. 94) extended the special pay cut-off from 1 July 1975 to 1 July 1977 for physicians and dentists but not for veterinarians and optometrists. It also terminated continuation pay for physicians and instituted Variable Incentive Pay for physicians (VIP).
16. The Act of 21 April, 1976 (Pub. L. No. 94-273, 90 Stat. 325), extended the authority for VIP to 30 September 1976, in connection with the new October-September fiscal year cycle.
17. The Act of 14 July, 1976 (Pub. L. No. 94-361, 90 Stat. 923) extended VIP authority to 30 September 1977.
18. The Act of 30 September 1977 (Pub. L. No. 95-114, 91 Stat. 1046-1047) extended the cut-off date for physicians and dentists from July 1977 to 30 September 1978 and reinstituted the special pay of \$100 per month for optometrists and veterinarians. It also modified the special pay structure for physicians by making them eligible for the maximum of \$350 monthly after only two years of active service. Authority for VIP was extended until 30 September 1978.
19. The Department of Defense Appropriation Authorization Act of 1979 (Pub. L. No. 95-485, 92 Stat. 1619) extended the special pay for physicians and VIP from 30 September 1978 to 30 September 1980.
20. The Uniformed Services Health Professionals Special Pay Act of 1980 (Pub. L. No. 96-284, 94 Stat. 587 et seq) made permanent the special pay of \$100 per month for veterinarians, optometrists and dentists. It also froze the rates at which dentists could receive continuation pay to those which existed on 1 October 1979 and instituted the new Special Pay for Medical Officers of the Armed Forces.
21. The Public Health Services Act of 7 October 1980 (Pub. L. 96-398, 94 Stat. 1608) provided for the payment of commissioned medical and dental officers of the Public Health Services in the same manner as medical and dental officers of the Armed Forces.

SUMMARY OF SPECIAL PAYS FOR MEDICAL OFFICERS

PROVISIONS AND ELIGIBILITY	RATES	METHOD OF PAYMENT
	Years of Creditable Service	Annual Variable Special Pay
- Variable Special Pay	less than 6	\$ 5,000
	6 but less than 8	10,000
-- based on creditable service	8 but less than 10	9,500
	10 but less than 12	9,000
	12 but less than 14	8,000
	14 but less than 18	7,000
	18 but less than 22	6,000
	over 22	5,000
	If an intern	only \$1,200
	If 0-7 or above	only \$1,000
- Additional Special Pay	\$ 9,000 (less than 10 yrs)	Annually
-- not undergoing in ternship or resi- dency	\$10,000 (10 or more yrs)	
-- agrees to one year active duty commit- ment		
-- based on creditable service		
- Board Certification Pay	\$ 2,000 (less than 10 yrs)	Monthly
-- board certified	2,500 to 4,000 (10 yrs but less than 18)	
-- creditable service	5,000 (over 18 yrs.)	
- Incentive Special Pay	\$ 8,000 maximum	Annually
-- not undergoing in- ternship or resi- dency	(amount cannot exceed 6% of total pay for all medical officers)	
-- agrees to one year active duty commit- ment		

SUMMARY OF RESPONSES

Medical Officers of the Armed Forces

Issues:

1. Manpower indicators for physicians have shown some improvement since the implementation of the Special Pay for Medical Officers.
2. A clear determination as to the specific long-term effect the special pay has had on the Medical Officer community can not be made because:
 - a. insufficient time has elapsed since its implementation;
 - b. the Services do not keep the data in a manner conducive to determining the full effectiveness of the pay, and
 - c. many other factors could have impacted on the attraction and retention problem thus masking the effect of the pay;
3. A comparison of civilian and military incomes for selected specialties shows that the military physicians income is significantly below that in the civilian sector.
4. The current Special Pay for Medical Officers structure should be retained.
5. The Services should maintain their data in such a manner that retention rates for physicians, after completion of obligations, can be computed.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Concurs.
Coast Guard	Concurs.
Public Health Service	Concurs.
NOAA	Defers to those Services which utilize the pay.
JCS	Concurs.

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SPECIAL PAY: PROFICIENCY PAY FOR ENLISTED MEMBERS

PROFICIENCY PAY

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PROFICIENCY PAY

I. PURPOSE. "Proficiency Pay is designed to provide an attraction and retention device for shortage category enlisted specialties...attract additional volunteers to unique duty assignments outside the member's normal skill progression pattern; and stimulate outstanding performance in any enlisted specialty thereby improving the proficiency of the armed forces as a whole."¹

II. DATA SOURCES. The data were primarily obtained from the Service staffs of the Army, Navy, Air Force, Marine Corps, Coast Guard and from selected historical reports and studies. Background field interviews were conducted with past and present Proficiency Pay recipients at Fort Bragg, NC, MCAS Cherry Point, NC, Camp Lejeune, NC, Fort Jackson, SC, Charleston Naval Base, SC, Kings Bay Naval Base, SC, Army Military Personnel Center, Alexandria, VA, Naval Military Personnel Center, Arlington, VA, Submarine Base, San Diego, CA, Naval Amphibious Bases in Coronado, CA, and Little Creek, VA, and the Naval Station, Norfolk, VA. PHS and NOAA have no enlisted personnel.

III. HISTORICAL PERSPECTIVE. The concept of "proficiency pay" originated with the 1957 Defense Advisory Committee on Professional and Technical Compensation (more commonly referred to as the "Cordiner Committee"). The Committee stated, "Proficiency pay is a direct and selective monetary inducement intended to improve personnel retention and job motivation. It was designed to give the Services an additional management tool in meeting the competition for critical skills and in developing and maintaining a balanced workforce."² The 85th Congress established Proficiency Pay with the enactment of the Military Pay Act of 1958 (Public Law No. 85-422, 70 Stat. 122). This statutory authority is codified in 37 U.S.C. 307.

Then, as now, the Armed Services were experiencing difficulty retaining personnel with technical or highly marketable skills. The Cordiner Committee believed that implementation of Proficiency Pay would allow the Department of Defense (DoD) to be more evenly matched in the competition for certain select groups of people. The mechanism it recommended to disburse the pay has been referred to as the "proficiency pay grade" method. Under this plan selected service members would be paid at a higher pay grade than they hold. However, they would not receive the concomitant promotion in military rank. In hearings before Subcommittee No. 2 (now called The Subcommittee on Military Personnel and Compensation) of the House Armed Services Committee, Chairman Kilday expressed concern that this method, by itself, did not provide the Department of Defense with the degree of flexibility that was required.³ The final version of the Bill to emerge from the Subcommittee provided for the payment of Proficiency Pay based on either the pay grade method or an alternative called the "proficiency rating" method. It also established the proficiency ratings and maximum statutory rates as depicted in Table 1.

Table 1
Proficiency Pay Rates

<u>Proficiency Rating</u>	<u>Maximum Statutory Monthly Rate</u>
P-1	\$50.00
P-2	\$100.00
P-3	\$150.00

The law provided no specific prerequisites or criteria which should be used in determining which proficiency rating or monthly amount that was to be paid. This meant that with the approval of the Secretary of Defense the Services could pay up to \$150.00 per month to any group. The House Report on this Bill stated: "The Alternative method is provided so that there will be complete flexibility in the program but will permit utilization for each service concerned of that method which will produce the desired results for that particular service."⁴ Thus, Congress provided a high degree of flexibility to the Department of Defense, leaving employment of Proficiency Pay subject only to the yearly Congressional appropriation review. The alternative method was the one chosen by all the Services. The Office of the Secretary of Defense (OSD) considered the proficiency pay grade method less suitable and has never used it; neither has the Coast Guard.⁵ Using this broad, Congressionally mandated flexibility, OSD has targeted specific groups to receive the pay. This has caused Proficiency Pay to evolve into three distinct types or categories, i.e., Shortage Specialty Pay, Superior Performance Pay, and Special Duty Assignment Pay.

The purpose of Shortage Specialty Pay (SSP) is to act as a retention incentive pay for those personnel serving in critical military skills which have exhibited low retention rates.⁶ Until FY 1975 and the introduction of the Selective Reenlistment Bonus (SRB) Program, SSP was the most important and highest funded of the three types of Proficiency Pay. At that point, the SRB program took over as the primary retention and incentive pay and the funding for SSP was reduced by 75 percent. It was phased out in FY76, except for a few selected skills. OSD had promised Congress that SSP would be reduced if SRB legislation was enacted. This reduction was simply the fulfillment of that promise.⁷

The second category of Proficiency Pay, Superior Performance Pay (SPP), was designed to reward those persons whose military skill was not considered critical or severely undermanned but who had exhibited a high degree of effectiveness in performance of their duties.⁸ Initially OSD limited the SPP payments to 15 percent or less of the total Proficiency Pay amount.⁹ By FY74, SPP had been allowed to rise to 30 percent of the total amount of Proficiency Pay. As with Shortage Specialty Pay, when the new Selective Reenlistment Bonus program was introduced in FY75, the OSD funding for SPP was reduced 50% and suspended completely in FY76. Since 1976, the only Service that has continued to employ the SPP category is the Coast Guard.

The third category of Proficiency Pay, Special Duty Assignment Pay (SDAP) was designed as an inducement for personnel to volunteer for special duty assignments which are manned below acceptable levels.¹⁰ With the reduction in SSP, SDAP became the primary operative element of Proficiency Pay.

IV. METHODOLOGY. The first section of this analysis will address the total population of Proficiency Pay recipients, and define the composition of those recipients by skill and type of Proficiency Pay for each Uniformed Service. Sections two and three will evaluate the two methods of payment which represent the major elements of the Proficiency Pay program. Section four will review an OSD proposed separate pay for Enlisted Recruiters. This evaluation is being conducted at the request of OSD and because enlisted recruiters are currently paid under the provisions of Proficiency Pay. A summary of the individual analyses will appear in Section five.

A. SECTION ONE: OVERALL PROFICIENCY PAY PROGRAM.

1. General. Table 2 depicts the number of DoD Proficiency Pay recipients and the associated costs. Personnel and costs are broken out by the specific categories of Proficiency Pay. Superior Performance Pay was terminated in FY76. The overall drop in total Proficiency Pay costs over time is the result of this action and the substitution of the SRB program in lieu of Shortage Specialty Pay. The increases in Shortage Specialty Pay in the most recent years (FY 80-82) is a function of the addition of several Navy Enlisted Classifications (NECS) to the list of those already drawing the Pay and a slight increase in the number of personnel holding NECs which had previously been authorized to receive the pay. The inclusion of several additional duty assignments (e.g., Career Counselor), which heretofore had not been authorized SDAP, has also caused an increase in this type of pay. The combination of these changes has slightly increased the total number of personnel receiving Proficiency Pay and its associated costs. Costs are expected to rise to approximately 49 million dollars in FY84 and then level off.

Table 3 shows the number of Proficiency Pay recipients by Service for FY82. Beyond showing the general distribution among the Services, this table also shows that the rate of payment, per individual, is approximately the same among the Services.

Table 2
DoD Proficiency Pay Recipients and Costs

	Shortage Specialty		Special Duty		Superior Performance		TOTAL	
	Personnel	Cost(\$000)	Personnel	Cost(\$000)	Personnel	Cost(\$000)	Personnel	Costs(\$000)
1972	153,301	125,998	23,485	15,292	79,451	28,602	256,237	169,892
1973	135,952	102,520	26,487	16,866	74,917	26,970	237,356	146,356
1974	106,205	70,384	24,713	15,659	80,894	36,211	211,812	122,254
1975	135,446	109,453	70,980	62,835	41,034	17,402	247,460	189,690
1976	36,496	38,259	13,405	11,578	0	0	49,901	49,837
1977	7,155	9,723	23,245	25,828	0	0	30,400	33,551
1978	6,840	9,503	23,016	26,110	0	0	29,856	35,613
1979	6,211	8,655	22,811	28,889	0	0	29,022	37,544
1980	7,253	9,662	25,058	31,895	0	0	32,311	41,557
1981	7,876	10,326	25,206	34,991	0	0	33,082	45,317
1982	9,127	11,512	25,871	35,489	0	0	34,998	47,001
est 1983	9,395	11,854	26,843	36,666	0	0	36,238	48,520
est 1984	9,627	12,133	26,964	36,686	0	0	36,591	48,819

Table 3
FY82 Proficiency Pay
Recipients and Costs by Service

<u>Service</u>	<u>Number of Personnel</u>	<u>Percent of Total</u>	<u>Amount of Costs (\$000)</u>	<u>Avg Annual</u>
Army	11,718	33.3%	\$ 15,923	\$1359
Navy	15,764	44.7%	20,068	1273
USMC	3,980	11.3%	5,560	1397
USAF	3,537	10.0%	5,464	1545
USCG	244	.7%	327	1340
TOTAL	35,243	100%	47,342	1343

2. Composition of Service Proficiency Pay Programs. With the exception of the Coast Guard, all Uniformed Services pay SDAP to enlisted Recruiters and Drill Sergeants/Instructors. The same general scheme and ascendant scale based upon experience in the special duty are used as follows:

Recruiter Pay rates:

- 0-3 months experience \$50.00 per month
- 3-9 months experience \$100.00 per month
- Over 9 months experience \$150.00 per month

Drill Sergeant/Instructor rates:

- 0-6 months experience \$50.00 per month
- 6-12 months experience \$75.00 per month
- Over 12 months experience \$100.00 per month

a. **Army.** SDAP is the only type of Proficiency Pay currently authorized by the Army. In addition to Recruiters and Drill Sergeants the Army also pays SDAP to Reenlistment NCOs and some Special Forces personnel (mission is classified). Table 4 depicts the distribution of SDAP in the Army for FY82.

Table 4
SDAP Distribution for Army

<u>Type of Special Duty</u>	<u>AVG Number</u>	<u>Annual Rate</u>	<u>Total Amt (\$000)</u>
P-3 (\$150.00) Recruiters	6,008	\$1,800	\$10,814
P-2 (\$100.00) Recruiters	844	1,200	1,013
P-1 (\$50.00) Recruiters	665	600	399
P-1 (\$50.00) Reenlistment NCO	832	600	499
P-3 (\$100.00) Drill Sergeants	1,180	1,200	1,416
P-2 (\$ 75.00) Drill Sergeants	1,098	900	988
P-1 (\$ 50.00) Drill Sergeants	975	600	585
P-3 (\$150.00) Special Forces Duty	116	1,800	209
Total	11,718		\$15,923

b. Air Force. At the present time, the only type of Proficiency Pay used by the Air Force is SDAP. It is paid to personnel on special duty assignment as Recruiters and Military Training Instructors. Table 5 shows the distribution of SDAP in the Air Force for FY82.

Table 5
SDAP Distribution for Air Force

<u>Type of Specialty</u>	<u>AVG Number</u>	<u>Annual Rate</u>	<u>Total Amt (\$000)</u>
P-3 (\$150.00) Recruiters	2,415	\$1,800	\$4,347
P-2 (\$100.00) Recruiters	311	1,200	373
P-1 (\$50.00) Recruiters	159	600	95
P-2 (\$100.00) Instructors/Drill Sgts	343	1,200	412
P-2 (\$ 75.00) Instructors/Drill Sgts	100	900	90
P-1 (\$ 50.00) Instructors/Drill Sgts	174	600	104
Total	3,502		\$5,421

c. Marines. The Marine Corps only pays SDAP. It provides SDAP to Recruiters, Career Planners, and Drill Instructors/Sergeants. Table 6 displays the distribution of SDAP in the Marine Corps for FY82.

Table 6
SDAP Distribution for Marine Corps

<u>Type of Specialty</u>	<u>AVG Number</u>	<u>Annual Rate</u>	<u>Total Amt (\$000)</u>
P-3 (\$150.00) Recruiters	2,069	\$1,800	\$3,724
P-2 (\$100.00) Recruiters	483	1,200	580
P-1 (\$50.00) Recruiters	241	600	145
P-3 (\$100.00) Drill Instructor/Sgt	545	1,200	654
P-2 (\$ 75.00) Drill Instructor/Sgt	240	900	216
P-1 (\$ 50.00) Drill Instructor/Sgt	259	600	155
P-1 (\$ 50.00) Career Planner	143	600	86
Total	3,980		\$5,560

d. Navy. The Navy pays both Shortage Specialty Pay and Special Duty Assignment Pay. The general types of skills or special duties authorized to receive these pays are:

Shortage Specialty Pay

Nuc Propulsion Plt Supervisor
Nuc Propulsion Operator
Divers
P-3 Flight Engineers
Gunners' mate Tech (GMT)
(ASROC Launchers)

Special Duty Assignment Pay

Recruiter and Recruit Classifier
Recruit Company Commander
Recruit Company Cmdr Assistant
Operation Deep Freeze Personnel
Rating Asgmt P. O. (Detailer)
Career Counselor
SERE (Survival, Evasion, Resistance
and Escape) Instructor

At Appendix A is a specific listing of NECs which are authorized to receive SSP. Table 7 shows the general distribution by rate of payment of SSP for FY82.

Table 7
SSP Rate of Payment Distribution for Navy

<u>Shortage Specialty</u>	<u>AVG Number</u>	<u>Annual Rate</u>	<u>Total Amt (\$000)</u>
P-3 (\$150.00)	3,050	\$1,800	\$ 5,490
P-3 (\$100.00)	3,319	1,200	3,983
P-2 (\$ 75.00)	1,254	900	1,129
P-1 (\$ 50.00)	1,470	600	882
Total	9,093		\$11,484

Table 8 reflects the distribution of Navy personnel by shortage specialty and rate of payment. The percentage figure represents the portion of specific rate of payment paid to each shortage specialty.

Table 8
SSP Rate of Distribution by Navy Shortage Specialty

<u>Shortage Specialty</u>	<u>P-3 (\$150)</u>	<u>P-2 (\$100)</u>	<u>P-2 (\$75)</u>	<u>P-1 (\$50)</u>
Nuc Trained P. O.	91%	69%	0	91%
Divers/Special Warfare	9%	0	100%	9%
P-3 Flight Engineers	0	22%	0	0
GMT (ASROC Launchers)	0	9%	0	0
	100%	100%	100%	100%

Table 9 shows the distribution of SDAP in the Navy for FY82.

Table 9
SDAP Distribution for Navy

Type of Special Duty	AVG Number	Annual Rate	Total Amt (\$000)
P-3 (\$150.00) Recruiter & Classifier	3,176	\$1,800	\$5,717
P-2 (\$100.00) Recruiter & Classifier	690	1,200	828
P-1 (\$ 50.00) Recruiter & Classifier	357	600	214
P-3 (\$150.00) Operation DEEP FREEZE*	72	1,800	67
P-3 (\$100.00) Recruit Company Cmdr & Asst	646	1,200	775
P-2 (\$ 75.00) Recruit Company Cmdr & Asst	290	900	261
P-1 (\$ 50.00) Recruit Company Cmdr & Asst	244	600	146
P-1 (\$ 50.00) Rating Asgn Petty Officer	352	600	211
P-1 (\$ 50.00) SERE Instructor	197	600	119
P-1 (\$ 30.00) Career Counselor	682	360	246
Total	6,706		\$8,584

* Operation DEEP FREEZE personnel are only paid for 6 months of each year.

e. Coast Guard. The Coast Guard is the only Uniformed Service which pays Proficiency Pay in the form of Superior Performance Pay and this is the only type of Proficiency Pay used by the Coast Guard. Enlisted personnel in charge of afloat units, Search and Rescue (SAR) Stations, Aids to Navigation Teams (ANT), Aids to Navigation Facilities, (ANFAC) and Long Range Aids to Navigation (LORAN) Stations are eligible for consideration of an award of Superior Performance Pay of \$50.00 per month. Awards are made by Coast Guard District and are limited to 15 percent of the total number of eligible personnel. For FY82, the average number of personnel receiving SPP was 32. The total cost of this program was \$19,200.

B. SECTION TWO: PROFICIENCY PAY GRADE METHOD.

As noted earlier, this is one of two methods of payment of Proficiency Pay. Under this plan selected servicemembers would be paid at a higher pay grade; however, they would not receive the concomitant promotion in military rank. This method has never been used by the Uniformed Services. The primary reasons given are the potential degradation of morale and administrative difficulties associated with such a plan. For example, a service member who is senior in rank to another and who is the supervisor of the other, could be paid at a lesser rate. This would not only be cause for a high degree of friction between individuals, it would also decrease the importance of the military rank system. This,

coupled with the administrative difficulties of keeping track of who gets paid what pay grade vis-a-vis their military rank, makes the possible use of the pay grade method very unlikely.

C. SECTION THREE: PROFICIENCY PAY RATING METHOD. This second method of payment consists of three categories.

1. Shortage Specialty Pay Category.

This section will focus on the analysis of Shortage Specialty Pay, currently paid only by the Navy, and the determination of its need as an incentive to remain in selected career fields. Historical manning levels for the general career groups receiving SSP are depicted in Table 10. Data is broken out by SRB Zones because that is the manner in which reenlistments are most often measured. Zones are defined as: Zone A, 1-6 years; Zone B, 6-10 years; and Zone C, 10-14 years.

The data displayed in this table shows several obvious trends. Within the nuclear community, Zone A is consistently overmanned. This situation is allowed to exist because the reenlistment rates for Zone A do not support the requirements in Zone B and C, as will be seen later in Table 11. It should be noted that even with this overmanning in Zone A, the community as a whole remains below 100%.

The diving community manning levels are also somewhat inconsistent. The high number of requirements in Zone B is a function of the unique training and experience within the Navy diving communities. For example, the experience required to attain advance diving qualifications within the Fleet diving community invariably extends beyond Zone A and the first reenlistment point. Further, lengthy training pipelines delay entry to the diving field. Moreover, the Explosive Ordnance Disposal (EOD) diving community actively pursues the recruitment of more mature members to their program.

The extremely low manning levels in Zone A for the P-3 Flight Engineers can be misleading. This is because P-3 Flight Engineers are lateral accessions at the E-5 level, often entering at the end of Zone A or the beginning of Zone B. Hence, the numbers of requirements in Zones A and B are only best estimates.

The GMT (ASROC Launchers) community exhibits manning peculiarities similar to those of the nuclear community; the reasons are also similar.

Historical reenlistment rates for the general career groups receiving SSP are depicted in Table 11.

Table 10
Manning Data

CAREER GPS	FY 80			FY 81			FY 82					
	ZONE			ZONE			ZONE					
	A	B	C	TOTAL	A	B	C	TOTAL	A	B	C	TOTAL
NUCLEAR TRAINED PETTY OFF	4286 *	1733	710	6729	4481	1395	805	6681	4977	1260	1041	7278
	3036	2195	1705	6936	3231	2317	1797	7345	3376	2614	2037	8027
	141X	79X	42X	97X	139X	60X	45X	91X	147X	48X	51X	91X
DIVERS					517	620	426	1563	562	655	422	1639
					788	1061	555	2404	858	1111	639	2608
P-3 FLIGHT ENGINEERS					66X	58X	77X	65X	66X	58X	66X	63X
									22	256	373	651
GUNNERS MATES ASROC LAUNCHERS									226	327	191	744
					128	43	33	204	10X	78X	195X	88X
					124	96	78	298	131	52	35	218
					103X	45X	42X	68X	106X	54X	45X	73X

* The upper figure in the actual inventory; the lower figure is the number of (funded required) authorizations.

**** This number represents the % manning.**

Table 11
Reenlistment Data

	FY 80			FY 81			FY 82		
	A	B	C	A	B	C	A	B	C
CAREER GPS	866 *	281	110	958	355	368	661	213	207
NUCLEAR									
TRAINED	1217	641	171	1246	570	383	1105	486	258
PETTY OFF	**								
	71%	44%	64%	77%	62%	96%	59%	44%	80%
				153	126	175	105	82	172
DIVERS				263	151	184	412	226	374
				58%	83%	95%	25%	36%	45%
				4	12	18	0	10	14
P-3				6	15	18	0	12	14
FLIGHT									
ENGINEERS				67%	80%	100%	NA	83%	100%
				43	20	32	36	24	30
GUNNERS									
MATES				119	26	33	84	26	30
ASROC									
LAUNCHERS									
				36%	77%	97%	42%	92%	100%
OVERALL	37%	51%	92%	42%	57%	94%	50%	63%	95%
NAVY									

* The upper figure is the number of reenlistments; the lower figure is the number eligibles.

** This number represents the % enlisted.

The Diving and Nuclear trained petty officer communities exhibited a drop in reenlistments in FY82. This drop is not a true decline in reenlistment rates, but a simple deferral of reenlistments that was brought about by fiscal constraints in the fourth quarter which temporarily closed down the Navy's SRB program. With a few exceptions, only 6 year obligated nuclear personnel and those who would permanently pass out of an eligibility window were allowed to reenlist for the bonus. Most individuals eligible to reenlist in that quarter were encouraged to extend and consequently elected to wait to reenlist after the beginning of FY83 in order to receive the bonus. Therefore, reenlistment rates were artificially low due to the temporary absence of the SRB.

The SRB multiplier for Zone C of the GMT (ASROC Launchers) and all zones of the P-3 Flight Engineers was 0. The SRB multiplier for Zones A and B of the GMT (ASROC Launchers) was 1. Hence, the amount of money to be gained by deferring reenlistment became less significant to the individual sailor. Accordingly, reenlistment rates for these two groups were not greatly affected by the funding shortages.

A simple comparison with the groups receiving SSP and the Navy's overall reenlistment rates indicates that the rates for the SSP groups are generally comparable or better than those of the overall Navy.

The data obtained from the Navy allowed for the calculation of zone reenlistment rates for each NEC which received SSP. These were calculated on a quarterly, yearly and overall basis for FY79-FY82. Using these data, a number of analytical techniques were employed to model the effects of SSP on reenlistment rates. However, given the time constraints of the study, it was found that an accurate model with measurable relationships could not be developed. This is in large part attributable to the fact that many of the career fields drawing SSP are already authorized Selective Reenlistment Bonuses. Hence, there is the distinct possibility that if any measurable relationship exists between SSP and reenlistments, it is masked by the SRB or the multiplicity of additional special pays which most of these NECs receive. It is believed, however, that because of the flexibility provided by its system of multipliers and the extensive amount of knowledge that has been developed with regards to its effectiveness, that the Selective Reenlistment Bonus Program is more properly the vehicle for dealing with reenlistment shortfalls.

A similar conclusion was drawn in the Report of the 1971 Quadrennial Review of Military Compensation which indicated that Shortage Specialty Pay was "marginally effective as a retention incentive." It further stated that "a bonus system would be the most effective incentive to solve the attraction and retention problems that may result in a zero-draft environment" and recommended that the "use of Shortage Specialty (Proficiency Pay) be administratively phased-out."¹¹

If it is determined that by discontinuing SSP the multiple for a specific career field needs to be raised, action should be taken to do

the maximum level, consideration should be given to developing a method of payment which would provide compensation to these personnel above the levels currently authorized for the SRB. This would necessitate the lifting of the SRB cap, a finding previously identified in the analysis of the SRB program. The method for providing such payment is also discussed in that analysis. Accordingly, the dollars currently set aside for Shortage Specialty Pay should be moved to the SRB program to accommodate higher or additional SRB payments.

2. Superior Performance Pay Category.

As was stated earlier, the purpose of the Superior Performance Pay (SPP) Category was to reward those personnel whose military skills were not necessarily considered critical or severely undermanned but who had exhibited a high degree of effectiveness in the performance of their duties. The 1970 OSD study of Proficiency Pay (Superior Performance) concluded that competitive Superior Performance Pay demonstrably improves the performance of the Army's enlisted population.¹² The measure of performance used in the study was the efficiency report and skill test scores for Army personnel. While the study group did a very good job of showing a high degree of correlation between these scores and the level of incentive provided by SPP, they failed to show any concrete relationship between these scores and actual benefit to the Services. Even OSD in its 1970 study observed, "The prestige factor associated with being selected as a "superior performer" is quite independent of the monetary reward."¹³

If SPP (which cost \$36 million in 1974) was subjected to a cost benefit analysis, it would be difficult to justify it as anything more than "a nice to have pay." By ceasing to provide funds to OSD for this pay beyond FY75, Congress indicated an unwillingness to authorize money for this purpose.

The Coast Guard continues to use SPP. It is designed as an incentive for superior performance and is paid to only 32 people for a total dollar amount of \$19,200. The fact that there are small numbers involved does not negate the requirement to be cost efficient and follow the general will of Congress. If there are enlisted positions which, by virtue of their degree of importance or special responsibility, demand additional compensation, then they should be paid under the heading of a revised form of Special Duty Assignment Pay.

3. Special Duty Assignment Pay Category.

As mentioned earlier, Special Duty Assignment Pay (SDAP) was designed as a pay which would induce personnel to volunteer for special duty assignments outside their normal career fields that were manned below acceptable levels or required a high number of volunteers. DoD Instruction 1304.22 (Administration of Enlisted Personnel Bonus and Proficiency Pay Programs) indicates that SDAP may be awarded for a special duty assignment "if it currently reflects, or in the absence of the incentive effect of special duty assignment (Proficiency Pay) is projected to

reflect by the end of the budget year, a significant shortage of volunteer manning and related combination of total manning."¹⁴

The quantitative criteria for these awards are displayed below. These criteria are difficult to understand unless considered in the context that the Services have control over the total manning levels. By choosing to man a special duty assignment at a certain level, the Services are dictating the range of dollars they will pay for various volunteer rates. The criteria and associated footnotes were extracted verbatim from DODI 1304.22¹⁵. This criteria was established by the 1970 Study of Proficiency Pay (Superior Performance) and has been altered only slightly since that time.¹⁶ Instead of redefining the criteria, the exceptions, as indicated in Footnote 1, have been added.

QUANTITATIVE CRITERIA FOR INITIAL AND CONTINUED DESIGNATION
OF A SPECIAL DUTY ASSIGNMENT FOR
SPECIAL DUTY ASSIGNMENT (PROFICIENCY PAY)¹

<u>Current or Projected Total Manning Level (%)</u>	<u>Current or Projected Volunteer Manning Level (%)</u>	<u>Award</u>
0 - 66	0 - 100	None
67 - 84	0 - 50	P-1 (\$30)
	51 or above	None
85 - 94	0 - 25	P-1 (\$50)
	26 - 66	P-1 (\$30)
	67 or above	None
95 - 100	0 - 25	P-2 (\$75) ²
	26 - 50	P-1 (\$50)
	51 - 75	P-1 (\$30)
	76 or above	None

¹ In coordination with the Assistant Secretary of Defense (Comptroller), the ASD(MRA&L) may waive the criteria regarding a shortage of volunteer manning and total manning levels for the special duty assignment of recruiter and recruit training instructors. Notwithstanding the awards authorized for special duty assignment (Proficiency Pay) in the above table, the ASD(MRA&L), under criteria prescribed by him, may authorize monthly amounts of special duty assignment (Proficiency Pay) up to the maximum P-2 amount of \$100 for the special duty assignment of recruit training instructors and up to the maximum P-3 amount of \$150 for the special duty assignment of recruiter, Navy recruit classifiers, and Deep Freeze Det Alpha personnel.

² No P-2 (\$75) awards shall be authorized until the actual effectiveness, based on military service experience, of the lower awards has been evaluated and approved by the ASD(MRA&L).

The net result of the exception has been to release the excepted special duties from the constraints initially recommended by the 1970 Study of Proficiency Pay and allow payment of SDAP to those special duty assignments, no matter what the level of manning or volunteers is. This has been borne out by the fact that within selected Services the special duties of Recruiter and Drill Sergeant/ Instructor are often consistently manned above 90% and enjoy a 100% annual volunteer rate, while receiving SDAP in the amounts previously outlined for these two special duties. In essence, the exception of these special duties from the constraints of the criteria provide for the payment of SDAP unless both the volunteer rate and the manning levels are equal to or greater than 100%. This is a condition which is most unlikely to occur; hence, a condition which insures the perpetual payment of SDAP to these duties. When this happens on a continual basis, the inducement value of the SDAP is eroded and it begins to be perceived as a right or entitlement associated with that specific job. Table 12 shows the percentages of Drill Sgt/Instructors who volunteered for the duty. Table 13 displays similar information for Recruiters.

Table 12
Drill/Sgt Instructor Volunteer Rate

<u>Service</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
Army	48%	Not Avail	65%
Navy	Not Avail	Not Avail	90%
USAF	100%	100%	100%
USMC	100%	100%	100%

Table 13
Recruiter Volunteer Rate

<u>SERVICE</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
Army	50%	30%	17%
Navy	Not Avail	45%	30%
USAF	100%	100%	100%
USMC	100%	100%	100%

An additional detraction to the inducement value of SDAP for Recruiters and Drill Sergeant/Instructors is the scheme of payment for these two groups. As indicated earlier, this scheme is an ascendant payment scale based upon the amount of experience in the special duty. It is difficult to understand why additional inducement (in the form of additional SDAP) is required to be paid to individuals who are already committed to a 2 to 4 year tour in the special duty assignment. This method of payment only further inculcates the belief in the mind of potential recipients that the SDAP is a form of additional compensation for a difficult job and, therefore, is an entitlement associated with that job. None of the Services appear to believe that SDAP is a true inducement for volunteers for certain special duty assignments. This is further substantiated by the fact that, when asked to comment on SDAP for recruiters, the immediate response is a general description of the hardships of the duty and the need to enhance the productiveness of experienced personnel. References are made to the requirement for volunteers, but, because of the obvious inconsistencies which have previously been shown in Tables 14 and 15, a clear requirement for the pay based on inducing volunteers cannot be produced. This is not to say that the payment of SDAP to these personnel is inappropriate. It is simply a recognition of the fact that the personnel receiving SDAP do not receive it because it induces them to volunteer for special duties, but rather because they perform duties which are extremely demanding or difficult and they should be compensated for the extra effort that the special duty requires. For example, there are few who would deny that recruiting is a difficult task, especially in favorable economic times. Moreover, studies have shown that the number of youths eligible for military service in the 1980's will decline while manpower requirements for the Services will increase. Such a competitive environment demands a more determined, aggressive approach which requires a willingness on the part of recruiters to work long hours and to travel extensively away from home and family. It would, therefore, seem logical to discard the volunteer inducement currently associated with SDAP and recognize the pay for what it is and should be--a special pay for extremely demanding duty. This does not mean that the Services should drop the requirement for volunteers to these duties. Volunteers should continue to be sought, but the voluntary requirement should not be incorporated into the pay. It should be handled individually within the Services.

If in selected cases, such as recruiting or drill instructor personnel, the duty is of a sufficient degree of difficulty to warrant additional compensation, then the requirement that the duties be outside the normal career field should be dropped. In place of this requirement, the criteria that the career field be one which can be entered only as a lateral accession after at least several years of service should be substituted. This added requirement would make the pay more accessible, while preventing its use as another form of Shortage Specialty Pay.

4. Other Observations.

During the course of the analysis it was observed that several career areas drawing Special Duty Assignment Pay are, under existing regulations, somewhat questionable. The Army, for example, authorizes this pay for Reenlistment NCOs. It is our understanding that this is now a regular career field and, therefore, does not qualify for SDAP which at present is intended to induce personnel to perform special duties outside their normal career fields. A similar situation exists in the Navy for Career Counselors. If there are reenlistment shortfall problems associated with these career fields, they should be addressed through other incentive pays designed to deal with such issues, i.e., SRBs.

The Navy pays SDAP to three other areas that should also be reviewed; for example, Rating Assignment Petty Officer (Detailer). During field interviews there were several indications that these individuals are receiving SDAP to help offset the high cost of living in the Washington, D.C. area. If this is so, the payment of SDAP is inappropriate.

The Navy and Army should insure that the continued use of SDAP for SERE (Survival, Evasion, Resistance and Escape) Instructors and Special Forces personnel, respectively, is based upon a valid need.

As for Operation DEEP FREEZE personnel, Certain Places Pay in the isolated/remote form proposed by the 5th QRCM would be the proper compensation in the future.

D. SECTION FOUR: SPECIAL PAY FOR ENLISTED RECRUITERS-OSD PROPOSAL.

In 1981 OSD proposed legislation which would authorize the following amounts of incentive pay for recruiting duty:

<u>Years in Recruiting Duties</u>	<u>Monthly Incentive Pay</u>
Less than 1	\$125
Over 1	200
Over 2	275

This pay would be formally referred to as "Special Pay: Recruiting Duty for Enlisted Members" and would be separated from the SDAP of Proficiency Pay.

The amount of the OSD proposed rates would be based on the fact that, when the present SDAP rates were established in 1958, the maximum Proficiency Pay amounted to 72% of the basic pay of an E-5 with over 6 years of service; today, the maximum Proficiency Pay rate amounts to only 16% of the basic pay of a similar E-5. Since 1958, the Consumer Price Index has more than tripled, yet recruiter incentive pay has remained fixed. To restore this pay to the equivalent status that Proficiency Pay held with regard to basic pay in 1958, when it was first authorized by Congress, would be

fiscally prohibitive; levels of payment would have to be increased by over 275%. Instead, DoD proposed to use as a benchmark the year of 1974, the first year in which recruiters were authorized to receive the higher levels of Special Duty Assignment Pay. Since 1974, the cost of living, as measured by the Consumer Price Index, has risen by about 8.9% annually. The target pay rate of \$275 per month was determined by calculating the rate of increase through Dec 1981 and applying an equivalent increase to existing Proficiency Pay levels.

The phasing of the proposed incentive pay increases was chosen to coincide with the generally accepted phases of recruiter productivity. During the first year of assignment the new recruiter completes his formal training and proceeds to his field recruiting assignment. He then begins an intensive period of supervised on-the-job training that will improve his recruiting skills, acquaint him with the local manpower environment, and give him practical experience in applying the skills learned during recruiter school and follow-on courses. By the first anniversary of his assignment to recruiter duties, the new recruiter should have completed his formal on-the-job training programs and be a productive member of the recruiting team to such a degree that his performance warrants an increase in incentive pay. The following year is spent functioning as a qualified recruiter, but substantial supervision and guidance is still required to enable the new recruiter to apply his newly acquired skills. After the second year, the recruiter has gained substantial knowledge, confidence, and experience, and the highest level of pay is thought to be fully justified. Special Pay for Enlisted Recruiters differs from SDAP for recruiters in the following ways:

- Special Pay for Enlisted Recruiters with no limitations would be paid to enlisted recruiter supervisors at recruiting headquarters. SDAP currently limits the payment to these individuals to \$50.00.
- The phase points for payment of the two pays are different.
- The amount of money paid at the phase points is different.

There can be little doubt that the monetary value of SDAP has decreased over time. The explanation for its decrease and required adjustments are appropriate. However, the philosophy of how and why Special Pay for Enlisted Recruiters should be paid is not unlike the current SDAP for recruiters. Given the similarity between the proposed pay and SDAP for recruiters, it would seem logical not to create another pay for a select group of people, but simply extend the present SDAP to meet the needs of the existing recruiter requirements while providing for other special duty assignments. Field recruiting is undeniably tough, arduous duty which frequently requires an individual to work long, hard hours under extreme pressure to meet monthly production quotas. Selection for assignment to a Headquarters staff position is a clear indicator that an

NCO is one of the best qualified recruiters. The selective nature of this assignment is evident; in the Air Force, for example, only about 4% of recruiters are assigned to Group or Headquarters positions. These recruiters perform vital training, supervision, leadership and policy implementation functions. A reduced rate of special pay may not be appropriate if it implies that duties performed by Group and Headquarters recruiters are not as important as those in the field.

E. SECTION FIVE: SUMMARY OF ANALYSES.

Having reviewed the major elements of Proficiency Pay in addition to an OSD proposed pay for enlisted recruiters, it is appropriate to summarize the results of these individual analyses and, in doing so, draw some conclusions regarding Proficiency Pay as a whole.

The Proficiency Pay Grade Method has little utility. It has never been used by any of the Uniformed Services and, in view of its potential negative impact on morale and its cumbersome administration there is no indication that it ever will be.

Within the Proficiency Pay Rating Method, only one of three pay categories has merit. We found little logical basis to support the payment of Shortage Specialty Pay. Since many of the SSP skills are also receiving Selective Reenlistment Bonuses, it would be more prudent to terminate SSP and apply a commensurate amount of money to the SRB program which contains the flexibility to better deal with shortage issues. Justification for the Superior Performance Pay category is, in an economic sense, extremely weak. This category was discontinued by OSD in 1976 and only a small amount is still paid by the Coast Guard. Because of the nature of duties associated with those who receive this pay, a revised SDAP could be expanded to include senior enlisted members to accommodate the Coast Guard requirement. The remaining category, Special Duty Assignment Pay, is considered to be an appropriate method for compensating personnel who perform difficult duties outside their normal career fields or within a career field which begins with lateral accessions several years into a military career.

As for the OSD proposed pay for enlisted recruiters, the rates outlined in the proposal are appropriate and were basically adopted; however, the remainder of the proposal was practically a form of Special Duty Assignment Pay for recruiters, with minor modifications.

All of these observations, taken in aggregate, point to the conclusion that, with the exception of a properly administered Special Duty Assignment Pay with increased rates, Proficiency Pay as it exists today has little value. It is further concluded that the criteria calling for volunteer manning levels first envisioned by the Cordiner Committee should be discarded. DoD would be better served by replacing the broadly mandated Proficiency Pay with a more narrowly defined, rate enhanced, Special Duty Assignment Pay. This new SDAP would recognize the pay as a form of extra compensation for a job that is extremely difficult or

involves an unusual degree of responsibility (e.g., Army Jumpmasters or Coast Guard Officers in Charge). If the Services desired to provide the pay to an entire career field, the only other criteria for SDAP would be that the career field be one which could be entered only as a lateral accession after several years of service, or that certain duties within the career field are identified as special or unusual.

V. FINDINGS.

A. Proficiency Pay should be discontinued in its present form based on the following:

1. Proficiency Pay Grade Method - This method of payment has never been used and it is unlikely that it ever will be.

2. Proficiency Pay Rating Method:

(a) Shortage Specialty Pay - The actual effect of this pay on reenlistments is not documented. The money spent on SSP could be better managed if it was moved to the SRB program where reenlistment shortfall problems are more properly addressed. However, certain QRMC proposed enhancement to the SRB program such as removal of the dollar ceiling on bonus amounts and the addition of a 7th multiple should be implemented as a first step to eliminating this special pay. SSP recipients should continue to receive payments while assigned to their current billet.

(b) Superior Performance Pay - This pay category is no longer employed by OSD. Only the Coast Guard continues to use it (32 people). It should be discontinued with consideration given to incorporating Coast Guard requirements into revised Special Duty Assignment Pay.

(c) Special Duty Assignment Pay - This category should be retained and become a separate pay replacing Proficiency Pay in its entirety. The rates should be enhanced to the maximum level of \$275 per month.

B. The OSD proposed Special Pay for Enlisted Recruiters should not be adopted since the creation of Special Duty Assignment Pay will fulfill the same purpose and continue to provide for other special duty assignments. The policy that limits payment of Special Duty Assignment Pay for recruiter supervisors should be changed to acknowledge the special circumstances of selection and assignment as a recruiter at headquarters.

C. Career areas currently drawing SDAP should be carefully reviewed and, if they do not meet the established criteria and fulfill the purpose of this particular pay, they should be eliminated.

VI. RECOMMENDATIONS.

A. Discontinue Proficiency Pay in its present form, thereby eliminating:

1. The Pay Grade Method
2. Shortage Speciality Pay Category - contingent on implementation of the 7th SRB multiple and elimination of dollar ceiling on SRB amounts.
3. Superior Performance Pay Category
4. The present form of Special Duty Assignment Pay

However, should a pilot program that relies upon the existence of Proficiency Pay as it is currently structured be in progress at the time of enactment of the amending legislation, participants in that program should receive Special Duty Assignment Pay at the old Proficiency Pay rate.

B. In place of Proficiency Pay institute the new form of Special Duty Assignment Pay based upon the extreme difficulty of the job or the high degree of responsibility.

C. Establish the maximum allowable amount of payment for this Special Duty Assignment Pay at \$275 per month.

D. Special Duty Assignment Pay policy should be reconstructed to permit payments to recruiter at all levels of command at the same levels payable to field recruiters.

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5. Department of Defense Directive 1340.2, "Proficiency Pay for Enlisted Personnel of the Military Services," September 27, 1958, p.3.
6. Report of the 1971 Quadrennial Review of Military Compensation, Enlisted Attraction and Retention Incentive Pays (separate volume), December 1971, pp I. 12.
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9. Defense Study of Military Compensation, VOL II, Proficiency Pay, TAB B, p.1, July 1962.
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11. 1971 ORMC, op.cit. pp. IV-V.
12. Study of Proficiency Pay (Superior Performance), Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), June 1970. p. 1.
13. Ibid., Chapter VI, p.3.
14. Department of Defense Instruction 1304.22, "Adminstration of Enlisted Personnel Bonus and Proficiency Pay Programs," April 20, 1983 pp. 5-3, 5-6.
15. Ibid., pp. 5-5 16. OASD op.cit. Chapter VIII, p.13.

NEC LISTING

<u>NEC</u>	<u>Award Level</u>	<u>Skill</u>
3351	P-2-100	Submarine Nuclear Propulsion Plant Operator-Welder
3353	P-2-100	Submarine Nuclear Propulsion Plant Operator-Reactor Control
3354	P-2-100	Submarine Nuclear Propulsion Plant Operator-Electrical
3353	P-2-100	Submarine Nuclear Propulsion Plant Operator-Mechanical
3356	P-2-100	Submarine Nuclear Propulsion Plant Operator-Engineering Laboratory Technician
3359	P-1-50	Submarine Nuclear Propulsion Plant Operator-Special Category
3361	P-3-150	Submarine Nuclear Propulsion Plant Supervisor-Welder
3363	P-3-150	Submarine Nuclear Propulsion Plant Supervisor-Reactor Control
3364	P-3-150	Submarine Nuclear Propulsion Plant Supervisor-Electrical
3365	P-3-150	Submarine Nuclear Propulsion Plant Supervisor-Mechanical
3366	P-3-150	Submarine Nuclear Propulsion Plant Supervisor-Engineering Laboratory Technician
3383	P-2-100	Surface Ship Nuclear Propulsion Plant Operator-Reactor Control
3384	P-2-100	Surface Ship Nuclear Propulsion Plant Operator-Electrical
3385	P-2-100	Surface Ship Nuclear Propulsion Plant Operator-Mechanical
3386	P-2-100	Surface Ship Nuclear Propulsion Plant Operator-Engineering Laboratory
3389	P-1-50	Surface Ship Nuclear Propulsion Plant Operator-Special Category

<u>NEC</u>	<u>Award Level</u>	<u>Skill</u>
3393	P-3-150	Surface Ship Nuclear Propulsion Plant Supervisor-Reactor Control
3394	P-3-150	Surface Ship Nuclear Propulsion Plant Supervisor-Electrical
3395	P-3-150	Surface Ship Nuclear Propulsion Plant Supervisor-Mechanical
3396	P-3-150	Surface Ship Nuclear Propulsion Plant Supervisor-Engineering Laboratory Technician
5311	P-3-150	Saturation Diver
5341	P-3-150	Master Diver
5346	P-3-150	Master Saturation Diver
5321	P-2-75	Combatant Swimmer (UDT)
5322	P-2-75	Combatant Swimmer (UDT/EOD Diver)
5326	P-2-75	Combatant Swimmer (Seal Team)
5327	P-2-75	Combatant Swimmer (Seal Team/EOD Diver)
5332	P-2-75	EOD Diver
5333	P-2-75	EOD Diver/Parachutist
5342	P-2-75	Diver First Class
8492	P-2-75	Special Operations Technician (Medical)
8493	P-2-75	Medical Deep Sea Diving Technician
5343	P-1-50	Diver Second Class
8251	P-2-100	P-3 Flight Engineer
0891	P-2-100	GMT (ASROC)

SUMMARY OF RESPONSES

Proficiency Pay

ISSUE:

1. Proficiency Pay in its present form should be discontinued based on the following:

- a. Proficiency Pay Grade Method - This method of payment has never been used and it is unlikely that it ever will be.
- b. Proficiency Pay Rating Method

(1) Shortage Specialty Pay - The actual effect of this pay on reenlistments is not documented. The money spent on SSP could be better managed if it was moved to the SRB program where reenlistment shortfall problems are more properly addressed. However, certain QPMC proposed enhancements to the SRB program, such as removal of the dollar ceiling on bonus amounts and the addition of a 7th multiple, should be implemented as a first step to eliminate this pay. SSP recipients should continue to receive payments while assigned to their current billet.

(2) Special Duty Assignment Pay - This category should be retained and become a separate pay replacing Proficiency Pay in its entirety. The rates should be enhanced to the maximum level of \$275 per month.

(3) Superior Performance Pay - This pay category is no longer employed by OSD. Only the Coast Guard continues to use it (32 people). It should be discontinued with consideration given to incorporating Coast Guard requirements into revised Special Duty Assignment Pay.

2. The OSD proposed Special Pay for Enlisted Recruiters should not be adopted since the creation of Special Duty Assignment Pay will fulfill the same purpose and continue to provide for other special duty assignments. The policy that limits payment of Special Duty Assignment Pay for recruiter supervisors should be changed to acknowledge the special circumstances of selection and assignment as a recruiter at headquarters.

3. Career areas currently drawing SDAP should be carefully reviewed and if they do not meet the established criteria and fulfill the purpose of this particular pay, they should be eliminated.

<u>DEPARTMENT</u>	<u>COMMENTS</u>
Army	Concurs.
Navy	Concurs.

Air Force	Concurs.
Coast Guard	Concurs.
PHS	Concurs.
NOAA	Defers to judgment of QRM staff.
JCS	Concurs.

LEGISLATIVE IMPLICATIONS

Proficiency Pay

1. Amend 37 U.S.C. 307 thereby replacing Proficiency Pay with Special Duty Assignment Pay. Incorporate the following specific changes:

- A. Change the name of the pay to Special Duty Assignment Pay.
- B. Cause the eligibility requirements to be based on job difficulty or responsibility.
- C. Increase the maximum rates to \$275 per month.

2. Amending legislation should provide for participants in pilot programs which rely upon Proficiency Pay as it is currently structured to receive Special Duty Assignment Pay at the old Proficiency Pay rate.

37 U.S.C. 305a
SPECIAL PAY: CAREER SEA PAY

CAREER SEA PAY

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CAREER SEA PAY

I. PURPOSE. Career Sea Pay (CSP) provides special compensation to personnel serving on sea duty in recognition of the unusually arduous nature of such duty and as a means of improving retention of personnel in sea service skills.

II. DATA SOURCES. The primary source of information used in this analysis was data received from the Navy, Marine Corps, Army, Coast Guard and National Oceanic and Atmospheric Administration (NOAA). The Air Force and Public Health Service (PHS) currently have no members receiving this pay although joint operations with a sea service may entitle them in the future. Other sources of information included the Maritime Administration of the Department of Transportation; the Department of Labor; reports of the Center for Naval Analyses, Alexandria, VA, Navy Personnel Research and Development Center, San Diego, CA, and the General Research Corporation, McLean, VA; articles printed in the U.S. Naval Institute Proceedings and assorted Congressional, General Accounting Office (GAO), Department of Defense hearings, studies and historical reports, and computerized files of the Defense Manpower Data Center. Although not a primary data source, field interviews were conducted with Navy, Marine Corps, and Coast Guard personnel of ships, squadrons and units in Norfolk, Little Creek and Oceana, VA; Baltimore, MD; San Diego and El Toro, CA; Charleston, SC; Kings Bay, GA and Washington, DC. A complete list of commands visited is located at Appendix A.

III. HISTORICAL PERSPECTIVE. Aside from certain bonuses and "bounties" starting in the early days of our country, some of which were also paid to seamen, Sea Pay is the oldest special pay. It dates back to the Act of March 9, 1813, passed during the War of 1812, and was then a special appropriation for officers and crews of ships, rather than sea duty pay as such.¹

The Act of March 3, 1835 (4 Stat. 755) established for the first time a differential pay for Navy personnel for duty at sea. Navy lieutenants received \$1,800 annually for sea service and \$1,500 for other duty.² A misconception of this pay was that the Navy "shore" pay was less than the prevailing rates of pay for Army officers. In fact, the Navy "shore" pay was about the same as that of Army officers and greater than the pay of Marine Corps officers.³ Boatswains, gunners, and sailmakers (warrant officers) received \$750 annually for sea service, \$600 for frigate duty (also at sea) and \$500 for other duty.

The Act of June 1, 1860 (12 Stat. 23) provided a short-lived but noteworthy development in the evolution of Sea Duty Pay. The length of an individual's cumulative sea service was recognized as a pay factor in some officer grades. The Act continued the within-grade differentials linked to the officer's duty status. It also prescribed pay steps based on length of sea service for the grades of lieutenant and warrant boatswain, gunner, carpenter, and sailmaker. This lasted two years for lieutenants and until 1870 for the warrant officer grades.⁴

The Act of May 13, 1908 (Pub. L. No. 60-115, 35 Stat. 127) terminated the 1835 Act duty status differentials for commissioned Navy officers and set up pay rates based on grade and length of service. However, "it established the principle of 'extra' compensation for sea duty by entitling officers to an additional 10 percent over their basic pay while performing such duty."⁵ Warrant officers and mates continued under the differential system. The 1908 Act did not authorize enlisted personnel Sea Pay, but it did provide a flat 10 percent increase in pay for Navy enlisted and a pay increase to Army and Marine Corps enlisted personnel by revisions of their regular pay tables. The impact of these changes was to pay Navy enlisted personnel better by at least 10 percent.

Most Sea Pay and all Foreign Duty Pay were terminated by the Joint Services Pay Act of 1922 (Pub. L. No. 67-235, 42 Stat. 625) and were not reinstituted until World War II. The one exception was the sea duty differential for Navy warrant officers. The Act of February 16, 1929 terminated this pay to warrant officers after 94 continuous years.⁶

The Act of March 7, 1942 (Pub. L. No. 77-490, 56 Stat. 148) revived Sea Pay (and Foreign Duty Pay) as a temporary wartime measure. It included enlisted personnel and warrant officers at an additional 20 percent over their basic pay and officers at 10 percent additional. A few months later these provisions were enacted into the Pay Readiness Act and remained in effect through the war, becoming part of permanent law in 1945.

The Hook Commission of 1948 recommended that Sea (and Foreign Duty) Pay be abolished for officers and modified to a scale not indexed to basic pay for enlisted personnel.⁷ The Hook Commission recommendations were partially adopted in the Career Compensation Act of 1949 (Pub. L. 81-351, 63 Stat. 802) which prescribes rates that approximated 10 percent of enlisted basic pay.

Beginning in 1967 and continuing throughout the 1970's, the Navy proposed Sea Pay on a "recognition-of-arduous-duty" philosophy.⁸ The Office of Management and Budget (OMB) and other interested groups unsuccessfully attempted to tie Sea Pay to retention and/or recruitment efforts and to create a bonus-type Sea Pay. Sea duty was viewed as arduous duty and a long-term problem best addressed by a long-term, career-oriented solution.⁹ In 1978 the Navy modified its position and incorporated retention aspects into the purpose of Sea Pay in addition to the "recognition-of-arduous-duty" concept.

The Department of Defense Appropriation Authorization Act of 1979 (Pub. L. No. 95-485, 92 Stat. 1620-1621) adopted an entirely new special pay for career sea duty (Career Sea Pay) with an effective date of 1 October 1978. The concept adopted in this legislation was based on the philosophy that those who serve longer at sea are the ones that ought to receive more Career Sea Pay. Officers continued to be excluded from drawing Career Sea Pay. The legislation provided for a three-year phased increase as well as saved-pay provisions for those not entitled

under the new regulations. An enlisted member in pay grade E-4 or above who had served more than three years on sea duty drew the new pay on an ascending scale, with amounts dependent upon total cumulative years of sea time. The rates ranged from \$25 per month to a high of \$55 per month. Under the phase-in, the maximum rate was to increase to \$100 beginning October 1, 1981. However, the Military Personnel and Compensation Amendments of 1980 (Pub. L. No. 96-343, 94 Stat. 1124), commonly called the Nunn-Warner Bill, provided an acceleration of the three year phase-in to be effective September 1, 1980 and added a 15 per cent increase to the rates. When the amendment was adopted by the Senate, the purpose noted was "to provide retention incentives to Navy personnel coming to the end of their first term of enlistment."¹⁰ The cited reason in the conference report was "the Navy's shortage of petty officers--particularly those with six to twelve years of Service."¹¹

The current Career Sea Pay legislation was established in December 1980 through the Military Pay and Allowances Benefits Act of 1980 (Pub. L. No. 96579, 94 Stat. 3364-3366). With rates effective January 1, 1981 (as shown in the table at Appendix B), this Act adopted an entirely new structure of special pay for career sea duty. The new law retained the philosophy of pay for cumulative years of duty at sea and extended the entitlement to officer personnel, except those of pay grades O-1 and O-2. In addition, members who serve more than 36 consecutive months of sea duty are entitled to a Career Sea Pay Premium of \$100 a month. Based on 37 U.S.C. 305a, implemented by Executive Order 11157, Sea Duty entails duty performed by a member:

a. While permanently or temporarily assigned to a ship, ship-based staff, or ship-based aviation unit and while serving on a ship the primary mission of which is accomplished while underway or while serving as a member of the off crew of a two-crewed submarine; or

b. While permanently or temporarily assigned to a ship or ship-based staff and while serving on a ship the primary mission of which is normally accomplished while in port, but only during a period when the ship is away from its homeport for 30 consecutive days or more.

A more detailed history of Career Sea Pay is located at Appendix C.

IV. METHODOLOGY. Since the Navy has most of the Career Sea Pay recipients, 91 percent, this review will focus primarily on an analysis of the Navy Career Sea Pay program. In order to conduct this analysis, the following questions must be addressed:

A. Is Career Sea Pay fulfilling its dual purpose of recognition of arduous duty and improving retention of personnel in sea service skills? That is, is duty at sea sufficiently arduous to warrant special compensation, and are manning and/or retention problems sufficient to warrant the pay?

B. Are the Career Sea Pay rates consistent with the purpose of the pay, appropriate amounts, and targeted correctly?

The analysis will address the number of recipients, program costs, service composition of sea duty forces, and the arduous nature of sea duty. Emphasis will be placed on ship and unit manning, attraction of personnel to sea duty and retention of personnel in the Navy, since it is by far the largest user of the pay. Finally, a review of the appropriateness of the pay and other studies on the effectiveness of Sea Pay will be conducted; public, private, and foreign systems will be examined; and the rates and eligibility issues will be addressed.

V. ANALYSIS.

A. CAREER SEA PAY RECIPIENTS AND COST. Table 1 shows the number of DoD Career Sea Pay recipients under the various statutes and rates in effect during the period 1974-1982. The decline in recipients from 1974 to 1978 represents a period during which Navy ships were reduced by about 50 percent. In FY 1979 the pay was restructured; personnel below E-4 and those with less than 3 years cumulative sea duty were no longer entitled. At the beginning of the second quarter of FY 1981 the current Career Sea Pay authority went into effect. Saved-pay provisions applied from the FY 1979 change through FY 1981.

Table 1
DoD Career Sea Pay Recipients and Costs*

<u>Fiscal Year</u>	<u>Total Personnel</u>	<u>Costs (\$000)</u>
1974	197,852	30,235
1975	194,420	29,932
1976	186,893	29,219
1977	177,919	27,442
1978	170,794	26,345
1979**	128,067	17,962
1980	95,665	14,369
1981 1st Qtr.***	87,849	3,720
2nd-4th Qtr.	78,515	132,645
1982	106,533	198,993

* Does not include FY 1973 due to inexplicable variance of more than 55,000 additional personnel drawing Sea Pay from those in Fiscal Years 1972 and 1974.

** Restructured as Career Sea Pay under FY 1979 law effective 1 October 1978. Cost and personnel figures reflect saved pay provisions for FY 1979, 1980, and 1981 for personnel not eligible for revised pay but already drawing Sea Pay.

*** FY 1981: First number is under 1979 Act, second number reflects current Career Sea Pay effective 1 January 1981 including \$100 per month Career Sea Pay Premium for greater than 36 consecutive months at sea.

Table 2 reflects actual man-years of Career Sea Pay payments for FY 1982 by pay grade and by Service including non-DoD Services. About 94 percent of the recipients are enlisted personnel. Navy members comprise most of the Career Sea Pay recipients; the Coast Guard is the other major user. A breakout of Table 2 data by pay grade is in Appendix D. Figure 1 summarizes the percent distribution by pay grade. Payments are concentrated in pay grades E-4 to E-6.

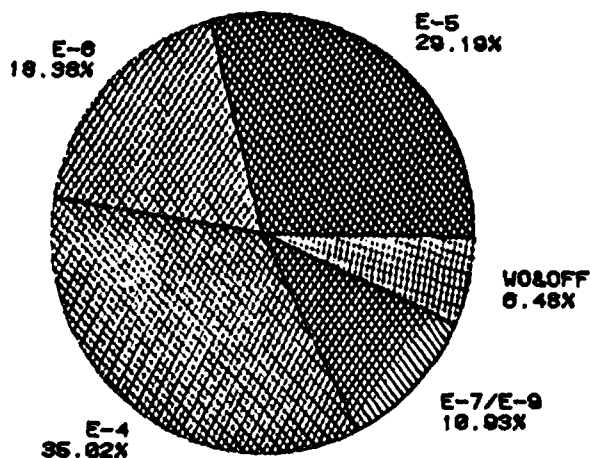
Table 2
Career Sea Pay Recipients
(by Service - FY 1982)

Service	Officer	Enlisted	Total	Percent of Total
Army	89	330	419	.4%
Navy	6,358	96,551	102,909	90.8
Marine Corps	34	3,171	3,205	2.8
Coast Guard	821	5,910	6,731	5.9
NOAA	43	-	43	.1
Total	7,345	105,962	113,307	100.0%

Percent of TOTAL	6.5%	93.5%	100%
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Figure 1

CAREER SEA PAY RECIPIENTS
FY 1982
PERCENT BY PAY GRADE
PERCENT OF PAY_GR



FY 1982 cost by Service and pay grade is provided in Table 3. It includes the \$100 per month Career Sea Pay premium. Over 90 percent of the dollars go to enlisted personnel. The pay is well distributed among those eligibles going to sea. A detailed breakout of Table 3 appears at Appendix E.

Table 3
Career Sea Pay Cost (Including Premium Pay)
(By Service - FY 1982)

<u>Service</u>	<u>Officer</u>	<u>Enlisted</u>	<u>Total</u>	<u>Percent of Total</u>
Army	312	412	724	0.3%
Navy	17,720	177,588	195,308	90.3
Marine Corps	63	2,898	2,961	1.4
Coast Guard	1,918	15,293	17,211	8.0
NOAA	97	-	97	0.0
TOTAL	20,110	196,191	216,301	100.0%
Percent of TOTAL	9.3%	90.7%	100.0%	-

Career Sea Pay costs are projected to grow about nine percent over the next five years. Table 4 reflects these projections. Both the Navy and Army will be building their sea forces during this period.

Table 4
Career Sea Pay - Cost Projections
(\$ 000)

<u>SERVICE</u>	<u>FISCAL YEAR 1983</u>			<u>FISCAL YEAR 1987</u>		
	<u>SEA</u>	<u>PREMIUM</u>	<u>TOTAL</u>	<u>SEA</u>	<u>PREMIUM</u>	<u>TOTAL</u>
NAVY	183,688	14,380	198,068	198,762	15,594	214,356
USMC	3,414	0	3,414	3,663	0	3,663
ARMY	927	78	1,005	2,179	128	2,307
USCG	16,239	1,189	17,428	18,029	1,544	19,573
NOAA	99	1	100	99	1	100
TOTAL	204,367	15,648	220,015	222,732	17,267	239,999

A. COMPOSITION OF SERVICE PROGRAMS. The majority of Career Sea Pay recipients are in skills not separately identifiable as belonging exclusively to a seagoing unit. The exception occurs for the Army, in which there are four military occupational specialty (MOS) codes unique to the marine field. The other Services have ratings or fields which are sea intensive, e.g., a boiler technician (BT) or boatswain's mate (BM), but the self-contained nature of a ship requires that a cross section of skills be assigned at sea. Therefore, these sea services have not identified the marine field separately.

1. Army. The U.S. Army operates 43 vessels, including thirty 115-foot landing crafts utility (LCU) manned by a crew of 11 personnel, five 65-foot tugs with a crew of six, five 100-foot tugs with a crew of 13, and 3 ocean-going vessels, such as the 339-foot USAV Sutton manned by 46 personnel. The vessels are generally located in three areas: Fort Eustis, Virginia; Ford Island, Hawaii; and the Azores, Portugal. The Army has these and other vessels to provide water transportation for personnel and cargo between ship and shore and for port and harbor operations. The larger vessels cited above also have missions in open seas. The LCUs are assigned to the U.S. Army Heavy Boat Company and the ocean going tugs, to Floating Craft Companies. These vessels have crew berthing and mess facilities aboard and are self sustaining for extended periods. The Army defines vessels/ships 65 feet and over in length as those which accomplish their primary mission underway.

The current authorizations for the 43 sea-going Army vessels are 112 warrant officers and 426 enlisted personnel of pay grades E-4 and above. The current inventory is 143 warrant officers, 798 personnel E-4 to E-9 and 601 members E-1 to E-3. There are three enlisted MOSs and two MOSs for warrant officers. No commissioned officers are assigned to sea duty although they may be in charge of several such vessels. The Army is programming to nearly double the size of its sea going personnel (to 1019) by FY 1987. This is due to receipt of new vessels, such as four new 300-foot freighters with a crew of 39-45 personnel, six 100-foot tugs with a 24-person authorization and 24 new 120-foot LCUs manned by 12-14 members. Some of these vessels will replace older ships, but there will also be a 20-25 percent growth in vessel inventory.

2. Marine Corps. Marine Corps personnel receive Career Sea Pay on the same basis as other Naval personnel. Primarily, the entitlement derives from assignment to seagoing ships' security detachments normally serving two-year tours of duty. Other Marines also serve as Combat Cargo Officers or are assigned to ships' company, e.g., in helicopter assault ships. Further, for those meeting guidelines for Career Sea Pay, i.e., enlisted E-4 to E-9 or officers O-1E, O-2E or O-3 and above with 3 years sea duty, the entitlement accrues whenever they are embarked in a Navy ship. This includes aircraft squadron detachments assigned to aircraft carriers or helicopter assault ships and units embarked awaiting contingency operations, such as the Caribbean Ready Group or the peacekeeping force that waited to disembark/assist in Lebanon during late fall of 1982 and in 1983.

The Marines have authorizations for 180 officer and 1,345 enlisted sea billets. However, in FY 1982, due to embarkations such as those cited above, they paid 3,171 man-years of Career Sea Pay. Authorizations are projected to increase by FY 1987 for establishment of detachments on four battleships as they are modernized and returned to commission. Eight officer and 168 enlisted billets will be added if all four battleships are funded by Congress.

3. NOAA. The National Oceanic and Atmospheric Administration owns and operates a fleet of 22 ships for the purpose of conducting oceanographic research, nautical charting surveys, tide and current surveys, and fisheries research. NOAA Corps commissioned officers are directly involved in the operation of 16 of these ships from the standpoint of command, navigation and research or survey functions. The majority of Corps officers serving aboard NOAA ships are deployed away from homeport in non-foreign areas. Occasionally, one of the larger ships is deployed to a foreign area in conjunction with an international oceanographic expedition. NOAA officers cite the stress of family separation due to sea duty as one of the most frequent causes for complaints and/or resignations. NOAA has no enlisted personnel. Civilian employees, paid in accordance with wage marine schedules, serve that function aboard NOAA ships. (Data on the pay of those employees are used later in the analysis for comparison to military scales.) During FY 1982, 99 NOAA Corps officers drew Career Sea Pay at one time or another. However, as of 30 September 1982 there were only 43 officers receiving the pay. One officer was receiving the Career Sea Pay Premium for duty exceeding three consecutive years at sea.

4. Coast Guard. The Coast Guard has 224 vessels operating in inland water ways, coastal areas and on the high seas. As with the Army, the Coast Guard defines those vessels/ships 65 feet and over in length as ones which accomplish their primary mission underway and, as such, entitle their personnel to continuous Career Sea Pay. The Coast Guard vessels in this category vary from six-person 65-foot cutters to 399-foot icebreakers with a crew of 180 members. Ninety of the Coast Guard ships exceed 140 feet with nearly 50 of them in excess of 200 feet long. The differing mission of the Coast Guard as compared to the Navy does mean that some vessels may never leave their local areas for lengthy deployments but instead operate a rigorous schedule within that area. Further, when in port, Coast Guard personnel can expect recall on a frequent basis, particularly on weekends and holidays. The Coast Guard paid about 6,700 members Career Sea Pay last year. This is 19 percent of its force and is similar to the Navy ratio. The Coast Guard is programming a slight increase in seagoing personnel as they bring into service a new 270-foot class of medium endurance cutters.

5. Navy. The Navy currently operates about 520 oceangoing ships, including 13 aircraft carriers and their embarked aircraft squadrons. Table 5 is a summary of the programmed changes in units for two years. Given long lead time procurement for ships and aircraft, these additions to the fleet most likely will occur even if the overall Navy

end strength is budget constrained. Thus, although priorities may change, the size of the Career Sea force will grow. In fact, the Navy is projecting a growth in sea billets (authorizations) of 11,000 by the end of FY 1984. Appendix F is a detailed breakdown of the programmed changes cited in Table 5.

Table 5
Navy Ship and Aircraft Squadron Changes
Between FY 1982 and 1984

<u>Summary of All Units</u>	<u>FY 1982</u>	<u>FY 1984</u>	<u>CHANGE</u>
Total Ships	513	526	+13
Total Aircraft Squadrons	255	266	+11

Table 6 is a review of those drawing Career Sea Pay during March 1983 based on mission of ship type of duty. The Navy's definition of ships whose primary mission is accomplished underway (Category A) is not determined by the length of the ships as with the other Services, although all of the Navy Category A ships are over 65 feet long. The Navy instead examines the actual mission of the ships. Those whose primary mission is accomplished inport (Category B) are large destroyer and submarine tenders (repair ships). The bulk of the payments go to Category A ships. Most of the remainder go to embarked aircraft squadrons and various air, diving, cryptological or photographic detachments. These data clearly indicate that the pay is going to the intended personnel who are in seagoing units. Later discussions will examine which skill areas have the greatest number of personnel receiving Career Sea Pay.

Table 6
Navy Career Sea Pay Recipients by Type Duty
(March 1983)

<u>Mission/Duty Categories</u>	<u>Officer</u>	<u>Enlisted</u>	<u>Total</u>	<u>% of Total</u>
Ship - Primary Mission Underway - Category A	4,552	90,958	95,510	84.3%
Ship - Primary Mission Inport - Underway More Than 30 Days to Draw Pay - Category B	108	2,512	2,620	2.3
Ship Based Staff	420	717	1,137	1.0
Embarked Aircraft Squadron or Staff and TAD/TDY Personnel	1,138	12,930	14,068	12.4
Total	6,218	107,117	113,335	100.0%

The same breakdown is reflected in Table 7 for those Navy personnel receiving the Career Sea Pay Premium. Most recipients are assigned in Category A ships. The staff members drawing the Premium reflect the policy of frequently assigning personnel from a ship to a follow-on tour on a ship-based staff to utilize these members' sea experience.

Table 7
Navy Premium Sea Pay Recipients by Type Duty
(March 1983)

<u>Mission/Duty Categories</u>	<u>Officer</u>	<u>Enlisted</u>	<u>Total</u>	<u>% of Total</u>
Ship - Primary Mission Underway - Category A	1,025	9,817	10,842	94.4%
Ship - Primary Mission Inport- Underway More Than 30 Days to Draw Pay - Category B	15	66	81	0.7
Ship Based Staff	93	81	174	1.5
Embarked Aircraft Squadron or Staff and TAD/TDY Personnel	106	285	391	3.4
Total	<u>1,239</u>	<u>10,249</u>	<u>11,488</u>	<u>100.0%</u>

Career Sea Pay annually impacts larger numbers of individuals than shown by some of the data. In fact, in FY82 over 165,000 Navy personnel drew Career Sea Pay at some time during the year as compared to the Table 2 numbers of about 103,000 man-years. Table 8 depicts a comparison using both the man-year figures from Table 2 and the total numbers of personnel drawing the pay. Also shown are the mean and median dollar payments of Career Sea Pay (average includes Premium Sea Pay). Among enlisted personnel, the mean amount of Career Sea Pay was about \$95 per month; the median was \$67.

Table 8
Navy Career Sea Pay Recipients and Mean/Median Amounts
(Fiscal Year 1982)

<u>Pay Grade</u>	<u>Navy Man-Years^a</u>	<u>Total Numbers^b</u>	<u>Mean Annual Amount (\$)^c</u>	<u>Median Annual Amount (\$)^c</u>
Commissioned Officer (O-1 to O-6)	5,604	9,146	1,600	1,500
Commissioned Warrant Officer (W-2 to W-4)	754	1,242	2,000	1,800
Enlisted Sub-Total	96,551	154,782	1,200	800
Total	102,909	165,170	1,200	\$ 800

Notes: a. Man-years are as reflected in Table 2 and Appendix D.
b. Total includes partial years for such reasons as TDY or PCS transfers.
c. Rounded to nearest \$100.

Appendix G is a breakdown of Table 8 by pay grade. It shows that the Navy's supervisory middle management force, the Chief Petty Officers (E-7 to E-9) and commissioned warrant officers (W-2 to W-4), receive the highest average payments (about \$2,100 annually).

Table 9 is a display of Navy officer occupational and certain pay grade groupings and the percentage of those within each group who normally receive Career Sea Pay and the Premium. The larger percentages drawing Career Sea Pay are surface and submarine warfare officers (about 25 percent). The low pilot and Naval flight officer (NFO) percentages are attributable to the three-year minimum requirement at sea prior to receipt of Career Sea Pay and to the fact that aviation personnel move on and off the aircraft capable ships on a frequent basis. Usually pilots fly their aircraft off the ship before it enters port. Since sea time is computed on a day-for-day basis, the time in port for pilots normally does not count. On the other hand, for the surface or submarine warfare officer in-port time is usually creditable towards sea time. About 40 percent of limited duty and commissioned warrant officers (communities which cross occupations) personnel draw Career Sea Pay at any one time.

Table 9
Navy Officers by Occupational/Pay Grade Grouping
Who Receive Career Sea Pay

<u>Occupational Grouping</u>	<u>% Drawing Career Sea Pay</u>	<u>% Drawing Premium</u>
Surface Warfare*	27.7%	8.7%
Submarine Warfare*	26.3	8.6
Naval Flight Officers (NFO)	10.1	0.3
Pilots	8.9	0.4
Chaplains	8.1	0.1
Dentists	1.9	0.0
Legal Officers	0.7	0.0
General Line	0.6	0.2
Physicians	0.5	0.0
Others (EDO, AEDO, CEC, Suppl)	8.7	0.5
 <u>Pay Grade Grouping/Community</u>		
Limited Duty Officers (LDO)	38.1%	7.6%
Warrant Officers	39.9	6.3
 All Navy - Officers	 14.3	 3.1
All Navy - Officers and Enlisted Personnel	26.1	3.1

* Additional data on sea duty time for surface and submarine warfare officers are included in the 5th QRMC review of Nuclear Officers Incentive Pays (Table 16) and Submarine Duty Incentive Pay (Tables 2, 3 and 4).

For an examination of the enlisted population who receive Career Sea Pay, the DoD Occupational Groups were also reviewed and are displayed in Table 10. These data indicate that the pay is being correctly targeted at sea intensive and shipboard technical areas. (Sea intensive ratings are defined as those for which the sea tour is longer than the shore tour.)

Table 10
Navy Enlisted Personnel by DoD Occupational Grouping
Who Receive Career Sea Pay

<u>Occupation Code</u>	<u>DoD Enlisted Occupational Group</u>	<u># of Navy Personnel In Group</u>	<u>Percent Drawing Career Sea Pay</u>	<u>Percent Drawing Premium Pay</u>
-	All Navy	492,000	19.0%	3.1%
0	Infantry, Gun Crews and Seamanship Specialties	16,000	30.2	5.2
1	Electronic Equipment Repairmen	62,000	32.3	3.4
2	Communications and Intel- ligence Specialties	42,000	24.3	3.2
3	Medical and Dental Specialties	25,000	9.7	0.2
4	Other Technical and Allied Specialties (Including Divers/EOD)	5,000	13.5	0.8
5	Functional Support and Administration	49,000	17.5	1.4
6	Electrical/Mechanical Equipment Repairmen	127,000	30.4	3.8
7	Craftsmen	26,000	19.7	2.1
8	Service and Supply Handlers	43,000	28.0	3.7
9	Non-Occupational Navy*	97,000	Not Avail	Not Avail

* Includes all E-1 to E-3's as well as students, patients and prisoners. However, for this table E-1 through E-3's were distributed to the respective areas. Thus, since E-1 to E-3's do not draw Career Sea Pay, the groups, particularly DoD Occupational Group 0, may indicate a lower percentage than would have been observed without inclusion of these junior enlisted.

Recognizing that such groupings may mask even further sea-intensive occupational areas, selected sub-groupings as reported by Navy are included in Table 11. Note the large percentages of shipboard missile and propulsion personnel as well as nuclear power personnel who are drawing Career Sea Pay. Similarly, these groups are also the ones receiving the Career Sea Pay Premium. Breakdowns of recipients into specific Navy ratings or Navy Enlisted Classifications (NECs) are difficult since historical finance records include pay grade but not rating or NEC. This would be of interest for follow-on study since rating and NEC Career Sea Pay information could more readily be compared in order to view the impact on retention.

Table 11
Navy Enlisted Personnel by Selected DoD
Occupational Sub-Groups Who Receive Career Sea Pay

<u>DoD Occupation Code</u>	<u>DoD Enlisted Occupational Sub-Group</u>	<u>Percent Drawing Career Sea Pay</u>	<u>Percent Drawing Premium Pay</u>
-	All Navy	19.0%	3.1%
050	Air Crew, General	26.7	0.3
222	Air Traffic Controller (Including Air Intercept and Anti-Submarine Air Controllers)	15.8	0.1
23X	Signal Intelligence/Electronic Warfare	33.3	4.3
43X	Ordnance Disposal and Divers (Including Shipboard SCUBA Divers)	21.0*	4.0*
53X	Data Processing	14.3	0.8
60X	Aircraft and Aircraft-Related Electrical/ Mechanical Equipment Repairmen	27.9	1.1
63X	Missile Mechanical and Electrical Repair- men (Including Navy GMM's)	63.1	7.8
65X & 66X	Shipboard Propulsion and Power Generating Equipment	53.3	8.3
661	Nuclear Power Operator and Supervisor	58.5	10.0

* Data derived from an interpolation of inputs for personnel in several naval enlisted classifications (NECs) varying from 4 percent to 24 percent drawing Career Sea Pay.

C. NATURE OF SEA DUTY. One of the cited purposes of Career Sea Pay is to provide special compensation to personnel for serving in ships where they undergo on a continuing basis arduous duty which is greater than the normal rigors of military life and more arduous than that confronting individuals in the private sector. Among the many factors contributing to the unique and arduous nature of sea duty are:

1. cramped living and working conditions aboard ship;
2. the unpredictability of operating schedules of Navy ship (e.g. deployments extended for months, ships diverted, etc.);
3. limited recreational facilities at sea;
4. inport duties assigned to shipboard personnel to maintain ship readiness (which often severely restrict liberty time when the ship is finally inport);
5. long and arduous working hours at sea;
6. long and repetitive deployments often interspersed with shifts of homeport;
7. the length and emotional hardships of family separations;
8. lack of personal freedom and certain legal rights;
9. environmental conditions (unstable platform, etc. - even a "salty" sailor gets weary after a lengthy transit in heavy seas);
10. lack of adequate medical and dental facilities onboard many units;
11. increased expenses for the individual (e.g., more wear and tear of clothing; government will not store automobiles, etc.);
12. hazardous working conditions (e.g. boiler rooms, refueling and replenishment at sea, small boat handling in heavy seas such as for pilot rescue, etc.);
13. reduction of disposable income (e.g., for single personnel the loss of BAQ, VHA and BAS when assigned to sea).¹²

All of the above, however, can be summed up into a few basic concerns, long working hours and family separation leading the list. That these are the two largest concerns of Navy personnel was confirmed by a Naval Personnel Research and Development Center (NPRDC) survey conducted in Summer 1977. Respondents were provided a list of 12 specific reasons, plus an "other" category, for justifying Sea Pay. They were

asked to indicate first, second and third reasons they believed most important. In the cumulative total of the top three reasons, the following stood out:

<u>Reasons for Sea Pay</u>	<u>Cumulative Total (%)</u>
Long working hours	64
Separation from family and friends	48
Harsh living conditions	35
Hazardous nature of sea duty	34
Loss of COMRATS, BAQ, etc.	30
Lack of privacy and personal freedom	26
Unpleasant working conditions	20

As NPRDC noted, the respondents felt "long working hours" and "separation from family and friends" were the most important reasons to justify Sea Pay.¹³ Appendix H contains a more detailed breakdown of the survey responses.

Based on the above, this section will contain a review of the working hours and family separation issues in order to examine the arduous nature of sea duty.

The established Navy standards for the working hours of Navy fleet personnel are pertinent. Table 12 represents the standard workweek around which Navy ships are both designed and manned. The minimum workweek is planned at 66 hours, which contrasts to the 40 hours of a private sector job. Beyond 40 hours the private sector frequently pays overtime.

Table 12
Navy Standard Workweek
for the
Computation of Billet Requirements*¹⁴

	<u>AT SEA (Hours)</u>	
	<u>WATCHSTANDER</u>	<u>NON-WATCHSTANDER</u>
WATCH	56.0	--
SERVICE DIVERSION		
AND TRAINING	4.5	6.0
SCHEDULED WORK	13.5	60.0
WORKWEEK	<u>74.0</u>	<u>66.0</u>
	<u>IN PORT (Hours)</u>	
	<u>WATCHSTANDER</u>	<u>NON-WATCHSTANDER</u>
AVAILABLE HOURS		
FOR ASSIGNED WORK	45	41

*OPNAVINST 1000.16E, 2 MARCH 1981, Policy, Tasking and Procedures for Managing Officer and Enlisted Manpower.

Data from the 1978-79 Department of Defense Survey of Officers and Enlisted Personnel revealed that enlisted personnel assigned to a ship work more average hours weekly than shore duty peers and longer than those in any of the other Services. Table 13 is a display of the data from the survey as indicated by responses to the question, "How many hours did you work last week?" Although a sixty-six hour workweek is planned, the actual hours worked are somewhat less. It should be noted that the data contained in all columns except "Navy Sea Duty" are for the total Service. Thus, the 48.8 for "Navy" E-3's is both shore and sea duty personnel. If shore were calculated separately, it would be lower than 48.8. This is true not only for Table 13 but for all subsequent tables using these survey data.

Table 13
Average Weekly Hours Worked by
Enlisted Personnel ¹⁵
(Average Hours)

<u>PAY GRADE</u>	<u>ARMY</u>	<u>NAVY</u>	<u>NAVY SEA DUTY</u>	<u>AIR FORCE</u>	<u>MARINE CORPS</u>
E-3	49.0	48.8	51.6	42.8	48.1
E-4	51.8	52.0	52.9	42.2	49.3
E-5	55.1	54.4	55.7	43.7	53.3
E-6	55.0	53.1	60.9	45.2	53.3
E-7	54.9	51.6	60.7	45.4	50.7

Similarly, a Navy officer on sea duty can expect to work longer hours than the overall Navy average and longer than his peers in other Services. Table 14 provides average weekly work hours for all Services based on responses to the 1978-79 DoD Survey. As it was for enlisted personnel, Navy officers assigned to ships also worked longer than their shore duty peers and longer than those in any of the other Services.

Table 14
Average Weekly Hours Worked
by Officers ¹⁶
(Average Hours)

<u>PAY GRADES</u>	<u>ARMY</u>	<u>NAVY</u>	<u>NAVY SEA DUTY</u>	<u>AIR FORCE</u>	<u>MARINE CORPS</u>
O-1	64.6	54.9	67.6	49.4	45.8
O-2	60.6	61.0	70.2	52.2	56.8
O-3	58.5	55.8	69.5	52.6	54.2
O-4	55.9	55.5	67.5	51.8	54.1
O-5	53.4	53.2	64.0	52.2	52.4

In commenting on the above differences in an article in the U.S. Naval Institute Proceedings entitled, "The Unique Hardships of Sea Duty", the following was noted:

"The difference between sea and shore work hours means a substantially lower income per hour worked for individuals on sea duty. Unlike wages for many public and private sector jobs, military pay does not vary by the number of hours worked. The difference in sea and shore duty is aggravated by the limited opportunity the seagoing member to work a second job."¹⁷

According to the Proceedings article, the 1978-79 DoD Survey also revealed that only about 10% of married personnel on sea duty have a second job as compared with 23% of Navy shore duty personnel.¹⁸

In addition to regular work hours, there are other duty hours for members on call, alert or duty rosters. This type of duty for Navy personnel is also greater. In fact, it is more than double that for many of their counterparts in the other Services. (Although not shown, a similar breakout of Marine Corps sea duty personnel indicates that they also have longer duty roster time at sea.) Table 15 represents data from the DoD Survey on this additional average duty time for certain grades.

Table 15
Average Weekly Time Enlisted Personnel Spend
On Call, Alert, or Duty Roster¹⁹
(Average Hours)

<u>Pay Grade</u>	<u>Army</u>	<u>Navy</u>	<u>Navy Sea Duty</u>	<u>Air Force</u>	<u>Marine Corps</u>
E-3	17.1	23.1	28.4	15.8	19.5
E-4	16.0	27.6	34.5	13.9	20.9
E-5	16.5	31.6	41.8	14.7	23.4
E-6	16.9	26.9	39.8	14.8	22.4
E-7	14.4	24.4	33.4	13.1	20.3

Further, for Navy shipboard duty, this time means being on board for 24 hours every third to sixth day, not just on call at home. Similar data for officers are shown in Table 16.

Table 16
Average Weekly Hours Officers Spend
On Call, Alert or Duty Roster²⁰
(Average Hours)

<u>Pay Grade</u>	<u>Army</u>	<u>Navy</u>	<u>Navy Sea Duty</u>	<u>Air Force</u>	<u>Marine Corps</u>
O-1	22.8	21.2	36.9	17.7	12.4
O-2	20.5	28.0	41.2	22.8	21.9
O-3	22.1	23.5	40.0	19.1	18.6
O-4	15.6	22.3	40.7	20.7	18.9
O-5	15.6	19.4	47.6	19.9	16.1

The other major concern of personnel is separation from family and friends. All of the Uniformed Services experience deployments, temporary duty, or the like. Thus, an effort was made to determine why Navy (as well as Coast Guard and NOAA) cite this so frequently as a major issue. For Navy, the emotional hardship of family separation is the primary factor given by enlisted personnel in separation questionnaires which determine motivation for terminating a career. Table 17 has data, again from the 1978-79 DoD Survey, for a Service comparison of cumulative percent of time enlisted personnel were separated from their families.

Significant in Table 17 is the amount of time involved in these separations. About fifty percent of Navy personnel assigned to ships were separated for more than 7 months in the preceding year. Eighty percent of the Navy sea duty personnel were separated at least 3 to 6 months in the year prior to the survey. All the on board single personnel were similarly separated from friends, community and possessions. Such hardships are exacerbated by lack of communications, slow mail, etc., particularly for submarines.

Table 17
Time Separated from Family in One Year Period
for Enlisted Personnel - 1978²¹

	Cumulative Percent of Time Equal to or Greater Than The Indicated Months				Percent With No Separation
	<u>11-12 Months</u>	<u>7-10 Months</u>	<u>3-6 Months</u>	<u>1-2 Months</u>	
ARMY	10%	18%	44%	63%	37%
NAVY	5	26	51	63	37
NAVY-SEA DUTY ONLY	9	48	80	90	10
AIR FORCE	4	7	20	39	61
MARINE CORPS	9	19	43	61	39
DOD-WIDE	7	17	38	55	45

Navy officers on sea duty experience similar time separated from their families -- 81 percent were separated for at least 3 to 6 months in the year prior to the survey. This compares to 29 percent for all officers in DoD.²²

Indications that some personnel on sea duty become disillusioned is verified in absentee statistics. Unauthorized absence and deserter rates are provided by Figures 2 and 3. These figures contrast the Navy afloat unauthorized absence and deserter rates with those for ashore commands, all-Navy and DoD-wide. In both Figures 2 and 3 the incidence rate for afloat Navy personnel is much greater than the rate for Navy personnel ashore and is nearly double the DoD-wide rate.

Figure 2

UNAUTHORIZED ABSENCE INCIDENT RATE PER 1000 MEMBERS

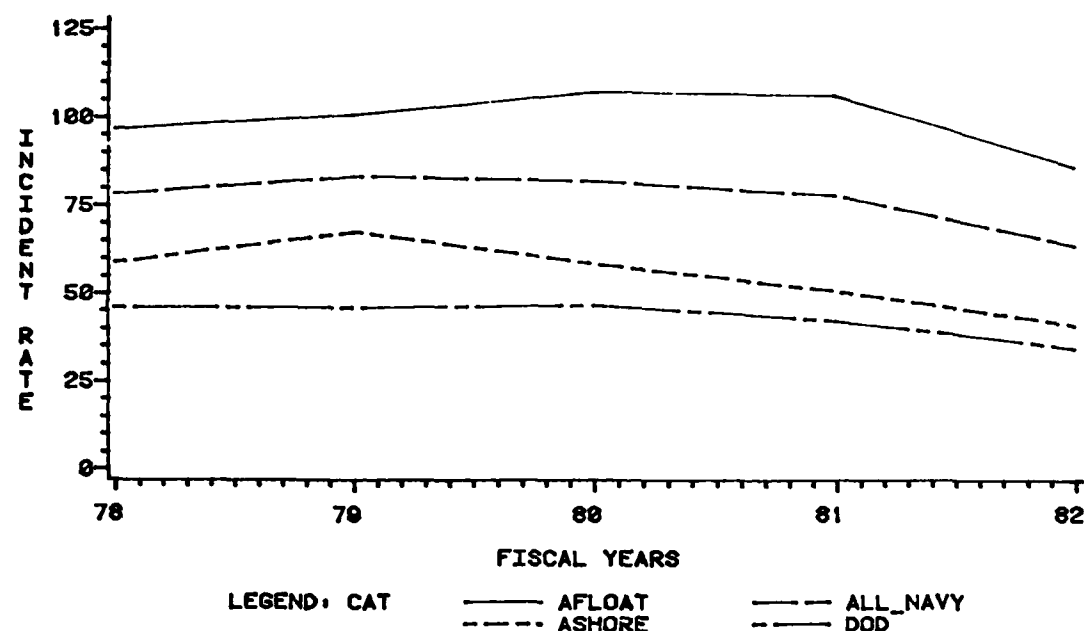
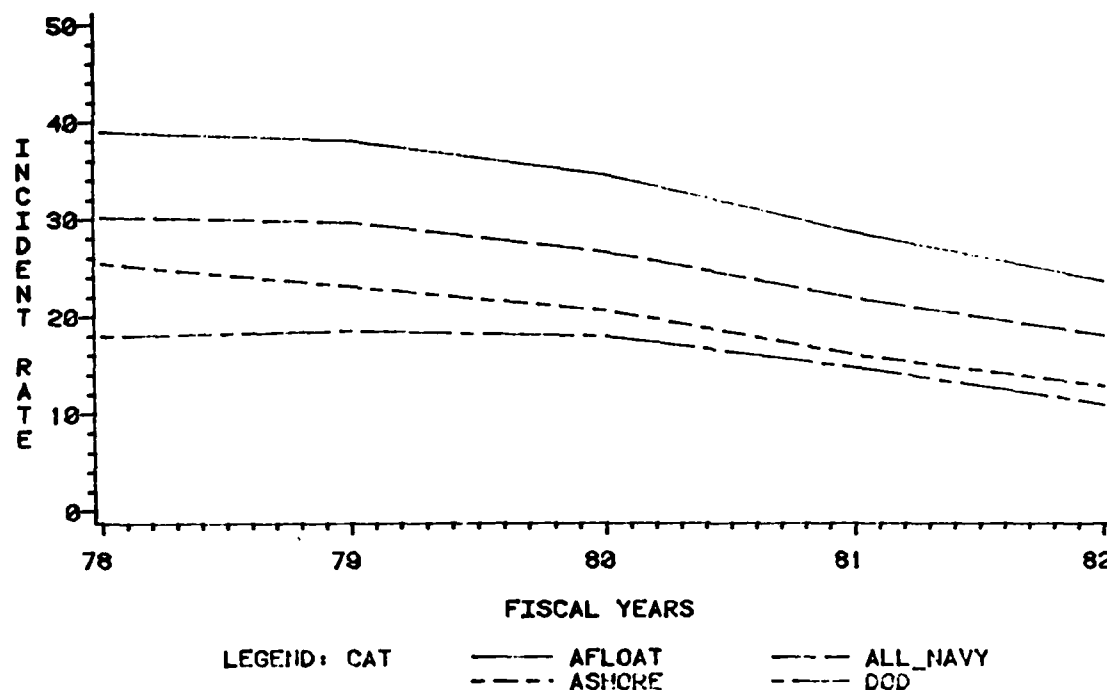


Figure 3

DESERTER INCIDENT RATE PER 1000 MEMBERS



The higher afloat incidence rates above are not as likely to be indications of quality variations in Navy assignments afloat and ashore as they are related to the long hours, arduous duties and strict discipline that the sea services maintain. Differences in sea and shore assignment policies (i.e., time in service) are factors. Moreover, sea duty simply loses its glamour rather quickly. When that realization becomes apparent to an individual and is coupled with the long working hours, the cramped living conditions, and the other factors previously noted, there is an increase in unauthorized absentees.

There have been some indications that the Navy operating tempo, particularly with added Indian Ocean deployments of 1979-1981, has increased since the Vietnam conflict. This was due to reduction in ships, reduction in personnel and poor retention, among other factors, without a concomitant reduction in mission or commitments. The analysis did not attempt to verify the operating tempo of ships. However, the Navy does compare operating schedules to changes in unauthorized absence/desertion rates and finds that increased operating tempo and longer working hours due to training, inspections, etc., correlate positively to increased numbers of absentees. The Navy believes that the unauthorized absence/desertion rates are a valid indication of the unusually arduous nature of sea duty. We agree.

We believe that sea duty is, in fact, arduous and does warrant monetary recognition. Sea duty has traditionally been rigorous in both war and peace.

D. PERSONNEL MANNING, ATTRACTION AND RETENTION. This section of the review will examine changes and trends in Navy sea billet manning, attraction of personnel to sea duty, and retention of personnel on sea duty. It will attempt to determine if there is any correlation between these changes and the most recent increase in Career Sea Pay. In the Department of Defense FY 1984 Force Readiness Report, Volume III: Personnel and Training Readiness, April 1983 (Classified) an unclassified paragraph on recent trends stated, "The Navy has experienced a very positive improvement in personnel readiness as a consequence of total inventory growth, and increased strength in needed grades and skills."²³ This section will determine if Career Sea Pay is contributing to this increased readiness.

Prior to the 1 January 1981 implementation of the restructured Career Sea Pay with increased rates, Navy inventory of personnel assigned to sea duty was at only 87 percent of authorizations. Since then there have been marked improvements in the manning of sea billets. Examining the technical and supervisory personnel in pay grades E-5 to E-9, Table 18 displays the improvement in total Navy manning and in sea billet manning. Total authorized billets have increased at about 2.5% per year since FY 1980, while sea billets have increased at about 2% per year for the same period. Despite those authorization growths the ship and squadron personnel manning shortfalls have been nearly eliminated in the aggregate - a significant achievement.

Table 18
Navy Career Petty Officer (E-5 to E-9)
Shortfalls At Sea Compared To All Navy

Force	End Fiscal Year	Authorized Billets(000)	Assigned Inventory(000)	Short Falls (000)	% Shortfalls
All Navy	1980	209.7	188.5	21.2	10.1%
Sea	1981	216.1	193.8	22.3	10.3%
Shore	1982	221.5	203.2	18.3	8.7%
	1983 (EST) ^a	227.0	214.1	12.9	5.7
At Sea	1980	90.7	79.0	11.7	12.9%
Only	1981	93.1	84.5	8.6	9.2%
	1982	95.2	93.7 ^b	1.5	1.6%
	1983 (EST) ^c	96.5	-	-	-

Notes:

- 1983 Estimate for entire year is based on actual figures through June 1983 with projections of July - Sept gains and losses.
- Only 90,273 are being paid as E-5 to E-9. The others are E-4's frocked to E-5. Using only E-5 through E-9 the shortfall is 4,900 personnel or 5.1% of the authorizations.
- No sea assignment projections are yet available for end FY83. However, Navy does estimate manning of E5 - E9 will be in the range of 2-5% in excess of authorizations.

The manning of sea billets was also examined across each pay grade using January 1981 data (the month of the major change to Career Sea Pay) and data from two years later--January 1983. This is displayed in Table 19. These data will not exactly match the Table 18 end fiscal year data because of variations in the Navy advancement cycle as well as some authorization changes which are done at the beginning of the fiscal year. Also, during this period of late 1980, after attention had been focused on the Navy petty officer shortages, several policy changes occurred in attempts to move all assignable personnel to sea billets. Concurrently, significant compensation changes such as a large basic pay raise, increases in Selective Reenlistment Bonuses and adoption of the Variable Housing Allowance were occurring. All of these variables make it difficult to isolate and identify the specific impact of the Career Sea Pay change.

As can be seen in Table 19, the total of petty officers (E-4 to E-9) have gone from about a 13,000 shortfall to a 4,000 member surplus while authorizations were increasing. In January 1981 there was a shortage of over 2,200 Master, Senior and Chief Petty Officers (E-9, 8 and 7) at sea. In two years this has been reduced to only 290. Only the E-6, E-8 and E-9 pay grades remain with significant shortfalls, and these may be due to the normal sea/shore rotation without sufficient time under the increased Career Sea Pay rates for junior personnel to advance, particularly with the slowed promotions.

As noted in Tables 18 and 19, Navy sea manning problems have been nearly eliminated. Some of this reflects a shift of personnel over the last 2 years from the shore establishment to sea billets. As highlighted in Table 18, the shore establishment is still short of personnel. One question, however, why this shift to sea billets was not done earlier. Navy states that in the 1978 to 1980 time frame, when pay lagged the civilian sector by a considerable amount, retention was so poor and Sea Pay such a token amount that anyone who did reenlist did not do so for sea duty. Instead, if eligible, they asked for a guarantee of shore duty. Once assigned ashore the individual could not be immediately ordered to sea.

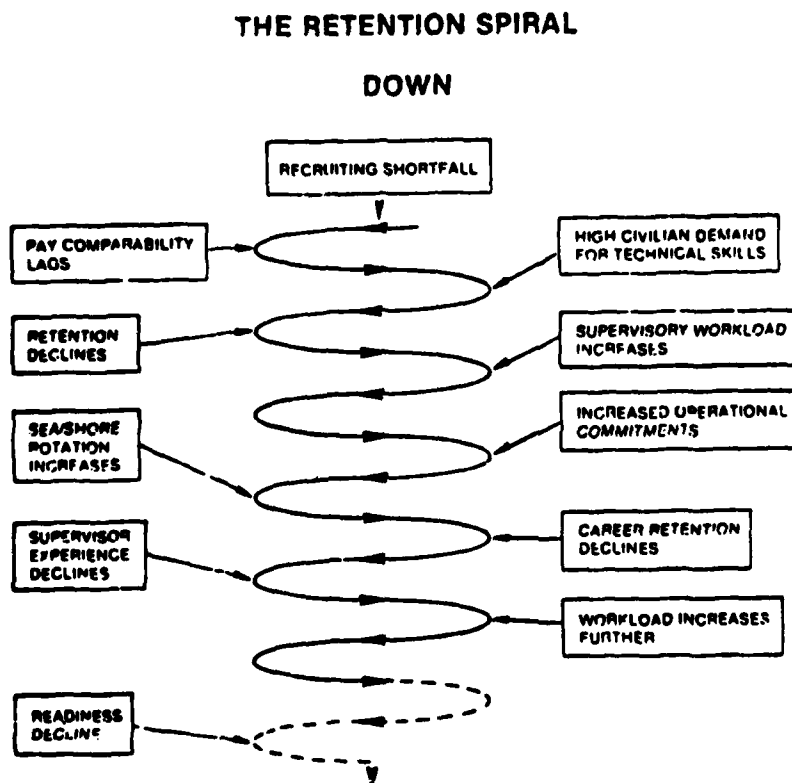
Table 19
Navy Sea Manning by Pay Grade*

	January 1981				January 1983			
	Auth Billets	Assign Inv	Shortfall	Percent Manned	Auth Billets	Assign Inv	Shortfall	Percent Manned
E-1/2/3	75,741	81,540	+5,799	107.7%	81,927	79,463	-2,464	97.0%
E-4	54,766	48,380	-6,386	88.3	58,248	56,917	-1,331	97.7%
E-5	44,733	43,953	-780	98.3	46,455	54,175	+7,720	116.6
E-6	29,715	26,326	-3,389	88.6	31,716	29,568	-2,148	93.2
E-7	11,324	11,167	-157	98.6	11,921	12,978	+1,057	108.9
E-8	3,826	2,483	-1,343	64.9	4,063	3,271	-792	80.5
E-9	1,555	797	-758	51.3	1,748	1,195	-553	68.4
Total	221,660	214,646	-7,014	96.8%	236,078	237,567	+1,489	100.6%
Total EA-E9	145,919	133,106	-12,813	91.2%	154,151	158,104	+3,953	102.6%

* Data extracted from Navy Enlisted Distribution Report (Report 1306-442 EM) of 02/02/81 and 01/31/83 for type 3 and 4 Sea Duty and Submarine and SSBN Duty. Although personnel on Neutral Duty, type 5, can qualify for Sea Pay under certain circumstances (when a destroyer tender deploys, for example), it was not included since it is not representative of a regular sea billet. Inclusion of type 5 duty results in increasing the shortfall in all grades for January 1981 to 10,451. The shortfall for all grades in January 1983 with type 5 included is about the same as above, +1462. In the above figures those selected for the next pay grades are included in the higher grade although advancement may not occur for several months.

Low retention caused an additional problem in shifting personnel to sea. The Navy had to access more recruits and provide more training. This training load increased shore billet requirements. Also, since most personnel reported a dislike for lengthy sea tours, shore billets were created and sea/shore rotation changes were made to provide more shore duty and to help increase retention. These attempts to create more shore billets were frequently thwarted by low sea manning because personnel were leaving the Navy at such a rapid rate that the workload at sea became even worse. The Navy frequently describes this period as a downward spiral, as depicted by the following figure:

Figure 4



The Navy states that while pay increases, the Variable Housing Allowance (VHA), the high civilian unemployment situation and increased respect for military have been helpful, the key to turning around sea manning has been the restructured and increased Career Sea Pay. During field interviews this was also the prevalent view held by commanding officers and by the officers and crews of ships which were visited.

Officer strength has also been a problem throughout this period. However, officers to a greater extent have been ordered to sea as needs dictated. Thus, the shortages, though severe, have not had a major impact on sea commands. Table 20 is a summary of the unrestricted line (URL) grade structure of authorizations compared to inventory for the end of FY 1980 and FY 1982. Officer authorized end strength has grown by 12 percent from FY 1979 to FY 1983. While the approximate 11 percent officer mid-grade shortfall (O-3 to O-5) was 2,567 at the end of FY 1980, it was down to 2,034 by the end of FY 1982. It has been reduced by 21 percent. Sufficient O-1's and O-2's were available in FY 1982 to overcome this shortfall in numbers but not experience.

Table 20
Navy Officer Authorizations Compared to Inventory*
(FY 1980 and FY 1982)

	<u>Authorizations</u>		<u>Inventory</u>		<u>Shortfall</u>	
	<u>FY80</u>	<u>FY82</u>	<u>FY80</u>	<u>FY82</u>	<u>FY80</u>	<u>FY82</u>
O-6	1,978	2,004	1,911	2,004	-67	0
O-5	4,622	4,747	4,286	4,374	-336	-373
O-4	7,479	7,545	6,835	6,975	-644	-570
O-3	10,733	11,193	9,146	10,102	-1,587	-1,091
O-2/1	11,638	12,561	13,490	15,162	+1,852	+2,601
TOTAL	36,450	38,050	35,668	38,617	- 782	+ 567

*Table reflects unrestricted line officers only. Total all Navy Officers FY 1979 authorization is 62,383. FY 1983 is 69,710. Includes restricted line and staff corps.

To determine what changes have transpired in attracting and retaining Navy personnel to sea duty, this review examined the data available for indications of a trend. One element of attraction is how effective Career Sea Pay is at inducing requests for transfer to sea duty. Table 21 provides a look at those requesting and receiving assignment to sea duty as an incentive for reenlisting. These data represent only those who are at the end of an enlistment and do show that, overall, Navy personnel have generally volunteered for sea duty at higher rates since implementation of Career Sea Pay than they had in the previous year. Note that in the first year of Career Sea Pay there was a surge of personnel in all grades requesting orders to sea duty. (The Navy terms this program "Guard III") As might be expected, this leveled off in FY 1982. There was a decline in E-7 to E-9's assignments, although these volunteers remained at a higher level than before the recent Career Sea Pay changes. Navy Assignment personnel report that Career Sea Pay has had a major impact on all pay grades in reducing reluctance to volunteer or accept orders from shore to sea billets. In fact, many are seeking sea assignments.

Table 21
Reenlistments Requesting Orders to Sea Duty

Pay Grade Grouping	FY 1980 Baseline	Fiscal Years					
		FY 1981		FY 1982		FY 1983*	
		#	% Change From FY 1980	#	% Change From FY 1980	Thru May 83	% Change From FY 1980
E-4	429	902	+110%	1,021	+138%	746	+161%
E-5 to E-9	2,704	3,375	+25%	3,405	+26%	2,027	+13%
E-7 to E-9	376	508	+35%	416	+11%	200	-20%
All Navy	3,190	4,328	+36%	4,497	+41%	2,599	+22%

* Only partial FY 1983 data (through May 1983) - Percentages based on rate for entire year.

** At current rate will attain 3899 reenlistment requests for orders to sea duty during FY83.

These data for FY 1983 show a drop in E-5 to E-9 reenlistments for sea duty--most significantly in the E-7 to E-9 pay grades. The Navy attributes this drop to the success of the Sea Pay program. As noted, Table 21 reflects only those who request and receive orders to sea duty at the time of eligibility for reenlistment. Table 19 showed the E-7 billets are now fully manned--in fact overmanned such that all E-7/8/9 billets at sea are nearly filled. These extra 1000 E-7's at sea are the basis for the drop reflected in the E-7 to E-9 line in Table 21. No billets are available for personnel even if they request it. Further, the Navy Guard III program for requesting orders on reenlistment is limited to those with less than 25 years' service and is constrained to a one-time use after first-term reenlistment.

Turning to a different side of the issue -- those already assigned and experienced in billets at sea -- Table 22 provides a look at those personnel who have requested extensions of at least a year on their sea tours. (The Navy did not keep detailed information on extensions prior to 1981 and, therefore, trend data including the year before the new Career Sea Pay rates are not available.) These data also show positive improvements in the desire to remain on sea duty.

One obvious reason for this, of course, is that there is an actual dollar loss in Career Sea Pay when terminating a sea assignment. Therefore, some will choose an extension just to retain the pay. However, this attraction is not as large as it would initially seem, particularly for E-4's. This is because, as field interviews revealed, the issue of reduced disposable income is frequently mentioned as a disincentive for sea duty. For example, for single personnel in-kind housing and food is provided in lieu of BAQ, VHA and BAS; married personnel receive food rations in kind in lieu of BAS. In 1980, much of the Navy argument for higher Career Sea Pay rates was based on this member dissatisfaction with the reduction in disposable income when assigned to sea.

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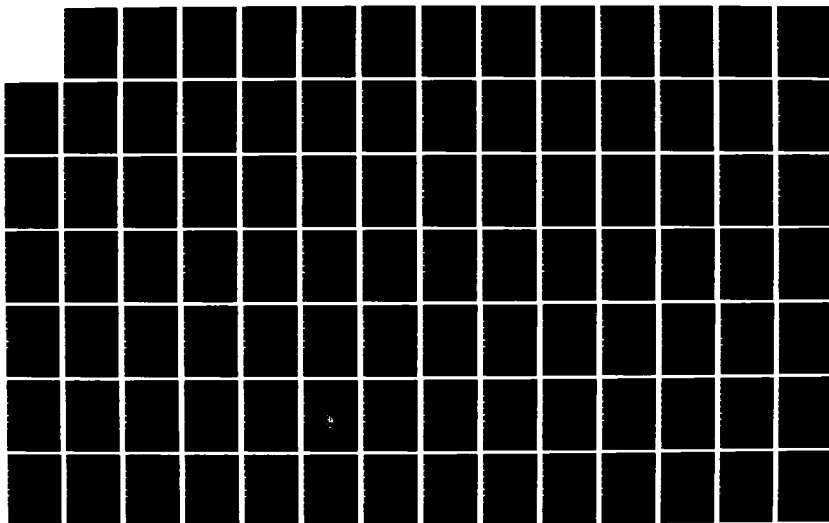
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VOLUME 3 SPECIAL AND INCENTIVE PAYS(U) OFFICE OF THE
SECRETARY OF DEFENSE WASHINGTON DC NOV 83

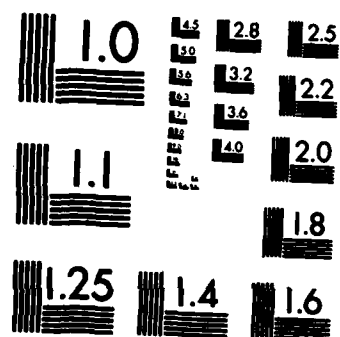
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Table 22
Personnel Extending Sea Tours

		<u>Fiscal Years</u>					
		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983*</u>	
<u>Pay Grade</u>	<u>FY 1980</u>		<u>% Change</u>		<u>% Change</u>	<u>#</u>	<u>% Change</u>
<u>Grouping</u>	<u>Baseline</u>	<u>\$</u>	<u>From Prev.</u>	<u>\$</u>	<u>From Prev.</u>	<u>Thru</u>	<u>From Prev.</u>
			<u>Year</u>		<u>Year</u>	<u>May 83</u>	<u>Year</u>
E-4	Not Avail	1,161	--	1,340	+15%	1,291	+45%
E-5 to E-9	Not Avail	3,135	--	3,411	+9%	2,523	+11%
E-7 to E-9	Not Avail	561	--	642	+14%	461	+ 8%
All Navy	3,010	4,768	+58%	5,455	+14%	5,406	+49%
Cumulative							
% Change From	--	--	+58%	--	+81%	--	+169%**
FY 1980							

* Only partial FY 1983 data (through May 1983) - Percentages based on rate for entire year.

** At current rate would attain 8109 extensions FY 1983; percentages prorated for the year.

Table 22, indicates that Career Sea Pay has offset some of this disincentive enough to convince 45 percent more of the E-4's to extend their tours than before the special pay was increased. Although the total extensions are only about 3.5 percent of the E-4 to E-9 billets, they do represent significant cost deferrals because permanent change of station (PCS) costs are temporarily avoided. For example, in FY 1982 there were 1,340 E-4, 2,769 E-5 and 642 E-6 extensions on sea duty. Costed out this means that Navy deferred payments of \$18,251,000 during FY 1982. In the long term, if tour lengths continue to be extended, this will be more than cost deferral. Such extensions also retain an experienced person, reduce on the-job training for a new individual, and increase unit stability and cohesiveness.

Examining figures similar to those in Tables 21 and 22 without FY 83 data, Cylke and Mairs of the Economics Analysis Branch of the Deputy Chief of Naval Operations (Manpower, Personnel and Training) had the following comments:

The outstanding feature of these statistics is the relatively large change from 1980 to 1981, the first year of the new policy. Reenlistments for sea duty increased more than 29% while extensions increased 58% over June of 1980. (Full-year changes are even more impressive, with a 36% gain in reenlistments and 58% gain in extensions from FY80 to FY81.) In comparison, the additional increase from 1981 to the present has been relatively small. The gross statistics, therefore, appear to show that sea pay is primary factor in encouraging voluntary duty at sea. However, there are other complicating factors which may obscure the marginal effect of sea pay, especially the effect on reenlistments for sea duty.

these factors are:

- a. The significant increases in pay during both FY81 and 82 plus increases in the Selective Reenlistment Bonus program and high civilian unemployment....
- b. Rising interest rates as well as the increasing loss of earnings of working military wives made moving more expensive -- this also may have made extended sea duty assignments more attractive.

Because of these complicating factors the most convincing evidence on the effectiveness of sea pay is the 58% increase in extensions for sea duty in FY81. Sailors do not have to extend for sea duty to take advantage of higher military pay (or higher civilian unemployment), nor does the increase in SRB affect that decision. Just remaining in the Navy is sufficient to take advantage of these changes. Although the effects of increasing wife's earnings or interest rates are still unknown it is unlikely that they changed considerably over the years in question - at least not enough to have produced the observed increase in sea duty extensions. ²⁴

Up to this point we have seen that Career Sea Pay has been a recent factor in attracting more personnel to sea duty and has improved extensions on sea duty. It is appropriate now to examine the contribution of Career Sea Pay in retaining personnel, in the sea service skills, one of the purposes of the pay. Table 23 contains retention rates in the ten most critical ratings at sea. Although many factors are currently affecting retention, in most cases those critical ratings do show improved retention rates. First-term personnel who cannot receive Sea Pay until they are promoted to E-4, have not matched the all-Navy retention rates. They usually are advanced to E-4 in about 2.5 years of service, and some may have already made career decisions by that point. On the other hand, and most importantly, second-term personnel show increases beyond the Navy average. For example, in FY 1980 seven of these ten ratings were within 10 percent of the all-Navy retention average. By FY 1982, eight of the ten were more than 10 percent above the all-Navy retention average of 63 percent. Another view of these ten critical ratings can be seen by taking a weighted average of the retention rates for FY 1980 and FY 1982:

<u>Retention Rate</u>	<u>First Term</u>		<u>Second Term</u>	
	<u>FY80</u>	<u>FY82</u>	<u>FY80</u>	<u>FY82</u>
All-Navy Rate	37%	50%	51%	63%
Weighted Average				
10 Critical-at-Sea Ratings	28%	35%	54%	77%

Although these ratings are less attractive to personnel at the first term, the Navy is retaining career personnel in these skills at a higher rate than the Navy average.

Table 23
Retention of Navy Enlisted Personnel in Ten
Most Critical Ratings at Sea

<u>RATING</u>	<u>FIRST TERM</u> (Zone A)					<u>SECOND TERM</u> (Zone B)					<u>THIRD TERM</u> (Zone C)				
	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83*</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83*</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>
BH-Boatswain's Mate	25%	21%	24%	34%	42%	57%	59%	70%	83%	83	90%	91%	93%	96%	97%
GMG-Gunner's Mate(Guns)	15	16	18	34	40	52	59	67	81	94	92	91	96	95	99
Fire Control Technician															
FTG-Guns	34	32	24	40	50	49	47	58	81	83	86	90	93	92	94
FTN-Missiles	47	41	32	33	27	69	53	74	64	66	85	80	90	94	93
EW-Electronics Warfare	58	34	13	36	51	43	54	43	82	76	76	90	77	95	96
STG-Sonar Technician (Surface)	47	39	22	32	33	41	56	62	72	71	87	89	92	93	97
IC-Interior Communications	24	27	22	32	30	46	53	62	74	78	81	84	92	92	91
AX-Aviation ASW	34	34	22	30	63	41	43	42	72	74	92	76	83	60	98
AZ-Aviation Maintenance	36	29	40	52	60	52	58	59	79	85	88	95	94	98	100
ABE-Aviation Boatswain	28	23	33	41	41	54	35	81	60	80	81	100	98	100	100
All Navy	38	37	42	50	55	45	51	57	63	67	91	92	94	95	97

* FY 1983 rates through June 1983 only

An obvious question raised by the above table is, as cited previously, the impact of other variables such as the Selective Reenlistment Bonus (SRB), the large catch-up increases in basic pay and the recent high unemployment rates of the recession. (An analysis of the impact of Basic Military Compensation pay raises and unemployment rates will not be accomplished in this analysis.) However, to view the SRB impact vis-a-vis the retention rates shown in Table 23, the SRB multiples were compared to these rates. (The SRB multiple is the factor, 1 to 6, which is used to in computing the the dollar amount of the SRB bonus.) From the comparison of an average yearly multiple with first term (approximates Zone A, 2 to 6 years of service) retention rates, it is apparent these first-term rates are usually impacted by changes in the SRB multiple. As an example, observe the following three career fields from Table 23 (the reader is reminded that FY83 rates are through June 1983 only):

<u>Rating</u>	<u>First Term</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>
Electronic Warfare (EW)	- Retention Rate (%)	58	34	13	36	51
	SRB Multiple	2	2	0	4	3.5
Fire Control Guns (FTG)	- Retention Rate (%)	34	32	24	40	50
	SRB Multiple	2	1	0	3	3
Interior Communications (IC)	- Retention Rate (%)	24	27	22	32	30
	SRB Multiple	2	1	1	3	2.5

Clearly, no one could claim that the FY 1982 and FY 1983 improvements in those three cases are due solely to Career Sea Pay. On the other hand, some ratings in Table 23 had little or no change in first-term SRB multiples after the large increases in Career Sea Pay. They are:

<u>Rating</u>	<u>First Term</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>
Boatswain's Mate (BM)	- Retention Rate (%)	25	21	24	34	42
	SRB Multiple	0	0	0	0	0
Sonar Tech (Surface) (STG)	- Retention Rate (%)	47	39	22	32	33
	SRB Multiple	4	4	3	3	2
Aviation Boatswain (ABE)	- Retention Rate (%)	28	23	33	41	41
	SRB Multiple	2	1	2	2	.5

These ratings showed an improvement in retention in FY 1982 and FY 1983. This may be due to poor job prospects in the local economy or to the impact of Career Sea Pay. In each case the retention rate lags the all-Navy average. Comparison of the Gunner's Mate (Guns) rating leaves some possibility open for each variable:

<u>Rating</u>	<u>First Term</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>
Gunner's Mate Guns (GMG)	- Retention Rate (%)	15	16	18	34	40
	SRB Multiple	0	0	0	2	1.5

In the first-term area, when personnel are considering whether to commit themselves for a career, many factors including Career Sea Pay are involved. Hence, it is difficult to isolate the full impact of Sea Pay.

Moving to the careerists for which Career Sea Pay was most intended, the same SRB comparisons were made in the second-term (approximates Zone B, 6 to 11 years) reenlistments:

<u>Rating</u>	<u>Second Term</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>
Electronic Warfare (EW)	- Retention Rate (%)	43	54	43	82	76
	SRB Multiple	1	2	2	5	3.5
Fire Control Guns (FTG)	- Retention Rate (%)	49	47	58	81	83
	SRB Multiple	1	1	0	3	3
Interior Communications (IC)	- Retention Rate (%)	46	53	62	74	78
	SRB Multiple	1	2	2	4	2.5
Sonar Tech Surface (STG)	- Retention Rate (%)	41	56	62	72	71
	SRB Multiple	2	4	4	6	4

Again, SRBs had an impact on reenlistments. However, SRB studies indicate that the impact is not as great in Zone B as in Zone A. The following looks at second-term data for ratings from Table 23 with little change in SRBs:

<u>Rating</u>	<u>Second Term</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>
Boatswain's Mate (BM)	- Retention Rate (%)	57	59	70	83	83
	SRB Multiple	0	0	0	.5	0
Gunner's Mate (Guns) (GMG)	- Retention Rate (%)	52	59	67	81	94
	SRB Multiple	0	0	0	1	0
Fire Control Tech Missile (FTM)	- Retention Rate (%)	69	53	74	64	66
	SRB Multiple	5	6	6	6	4
Aviation Maintenance (AZ)	- Retention Rate (%)	52	58	59	79	85
	SRB Multiple	0	0	0	1	0

Once again, importantly, in the second term most of these retention rates are now substantially above the Navy average. We believe Career Sea Pay has played an integral part in these improvements; however, more research must be done to isolate the impact of the variables and compare trade-offs between SRB and Career Sea Pay or between length of sea tours and amount of Career Sea Pay. (A table of SRB multiples compared to retention rates for all terms of the ten critical-at-sea ratings is at Appendix I.)

The same ten critical-at-sea ratings appear in Table 24 where the impact the retention changes have had on petty officer manning can be examined. Note that the sea manning in each of these ratings increased in FY 1983. However, in five ratings--ABE, AX, FTG, FTM and STG--the at-sea manning percentages are not as favorable as they were in FY 1980, the year before the major Career Sea Pay changes were effective.

A closer look at data in Table 24 examines the changes in inventory and authorizations using FY 1980 as the base year. Percentage changes from FY 1980 to FY 1983 are reflected in underlined areas of Table 24. As can be seen in the five ratings where the percentage manning declined or stayed about the same, the authorizations increased considerably:

<u>Ratings</u>	<u>Diff / % Change in Authorizations</u>
Aviation Boatswain (ABE)	206 / +23.5%
Aviation ASW Technician (AX)	115 / +17.2%
Fire Control Guns (FTG)	444 / +24.4%
Fire Control Technician (Surface Missile) (FTM)	573 / +26.2%
Surface Sonar Technician (STG)	214 / + 9.2%

Further, although percent manning declined, in three of these five ratings the actual inventory of personnel increased from FY 1980 to FY 1983 -- but not enough to catch up with the authorizations:

<u>Ratings</u>	<u>Diff / % Change in Inventory</u>
Aviation Boatswain (ABE)	187 / +26.3%
Aviation ASW Technician (AX)	44 / + 6.3%
Fire Control Gun (FTG)	383 / +22.2%
Fire Control Technician (Surface Missile) (FTM)	-260 / -12.6%
Surface Sonar Technician (STG)	-214 / - 8.5%

Table 24
Manning of Ten Most Critical-at-Sea Ratings*

<u>RATING</u>	<u>FY</u>	<u>SEA DUTY</u>		<u>SHORE DUTY</u>	
		<u>INV/Authorization</u>	<u>MANNING (%)</u>	<u>INV/Authorization</u>	<u>MANNING (%)</u>
ABE(E4-7)	80	709/878	80.8	367/309	118.8
	81	778/959	81.1	352/411	85.6
	82	857/1068	80.2	368/369	99.7
	83	+26.3 896/1084	+23.5 82.7	+11.2 408/423	+36.9 96.5
AZ(E4-8)	80	696/669	104.0	626/579	108.1
	81	660/745	88.6	492/522	94.3
	82	674/779	86.5	370/601	61.6
	83	+ 6.3 740/784	+17.2 94.3	-29.1 444/634	+ 9.5 70.0
AZ(E4-9)	80	892/971	91.9	1217/1256	96.9
	81	937/985	95.1	1163/1242	93.6
	82	972/1143	85.0	1157/1381	83.8
	83	+27.8 1140/1179	+21.4 96.7	+ 6.8 1300/1466	+16.7 88.7
BN(E4-9)	80	4589/4899	93.7	2764/2991	92.4
	81	4638/4936	94.0	2645/2956	89.5
	82	5324/5153	103.3	2511/3049	82.4
	83	+41.0 6470/5174	+ 5.6 125.1	- 9.7 2497/3009	+ 0.6 83.0
EW(E4-9)	80	1191/1332	89.4	301/401	75.1
	81	1217/1233	98.7	293/343	85.4
	82	1164/1328	87.7	363/438	82.9
	83	+13.5 1352/1302	- 2.3 103.8	+30.2 392/448	+11.7 87.5
FTG(E4-7)	80	1725/1819	94.8	519/687	75.6
	81	1698/1901	89.3	502/763	65.8
	82	1832/2198	83.3	504/767	65.7
	83	+22.2 2108/2263	+24.4 93.2	+25.4 651/856	+24.6 76.1
FTM(E4-7)	80	2071/2185	94.8	449/499	90.0
	81	1772/2355	75.2	457/628	72.8
	82	1654/2621	63.1	576/671	85.8
	83	-12.6 1811/2758	+26.2 65.7	+50.8 677/770	+54.3 87.9
GHC(E4-7)	80	1911/2099	91.0	983/866	113.5
	81	1601/2128	75.2	885/902	98.1
	82	1696/2219	76.4	774/914	84.7
	83	+ 7.9 2062/2143	+ 2.1 96.2	-17.9 807/891	+ 2.9 90.6
IC(E4-9)	80	3048/3680	82.8	845/860	98.3
	81	3094/3608	85.8	810/954	84.9
	82	3669/3791	96.8	776/978	79.4
	83	+16.6 3555/3674	- 0.2 96.8	- 5.1 802/1021	+18.7 78.6
STG(E4-8)	80	2528/2328	108.6	553/600	92.2
	81	2449/2483	98.6	513/739	69.4
	82	2392/2478	96.5	570/758	75.2
	83	- 8.5 2314/2542	+ 9.2 91.0	+26.2 698/749	+24.8 93.2

*Because some Navy ratings combine with others at the E-8 or E-9 paygrade, several of the above ratings are listed only to E-7 or E-8. FY 83 based on actual data through June 1983, with projections to the end of the fiscal year.

The Fire Control Technician (Surface Missile) (FTM) rating has been a particularly difficult one over the years as the skill is highly marketable. It currently is manned overall at only 71% and short 1,040 personnel. Aviation Maintenance Administrationmen (AZ) and Surface Sonar Technicians (STG) are also short as a percent of authorizations, but

both of these ratings are nearly ninety percent manned--much better than the FTM rating. Navy states that they are working to correct these shortages, but solutions are long term. They indicate, however, that Career Sea Pay has helped stem the losses in the FTM and STG ratings.

It can be observed from review of Table 24 that Navy has been required to simultaneously overcome an overall inventory shortfall of experienced personnel in most skills while sustaining growth in authorizations. As can be seen, at times this was accomplished at the expense of the shore (and training) facilities. Some of this shore inventory such as for AZs and STGs has been replaced. However, in four ratings--AX, EM, GMG, and IC--shore inventory is still below 1980 levels although authorizations have increased.

Overall, it is clear that in actual numbers of members and in percentage of manning, the Career Sea Pay has attracted personnel to sea and they are staying at sea.

In examining only the ten most critical-at-sea ratings, questions are likely to arise concerning other sea intensive ratings which are not on the list--boiler technician as an example. Table 24 displays retention rates and SRB multiples for five such ratings. (Others were not included in the table solely because the six-year obligation programs associated with the ratings could cause the retention rate data to be confusing to the reader of this analysis. Those ratings MM, EM, ET, and GSE should be included in any more extensive analysis of Career Sea Pay effectiveness. The BT and HT ratings were included here although there is a small six-year obligation program for BTs and a more sizeable one for HTs.) As can be seen in Table 25, there has been a positive improvement across these five sea-intensive ratings in all terms since the 1 January 1981 Career Sea Pay implementation. There are particularly strong increases in the second term reenlistments. Comparison to SRB multiples indicate that the bonus has been important in many of the changes, particularly in the first term where retention rates are below all-Navy rates. In the second term all rates are above the Navy average.

Table 25
Retention of Personnel in Selected
Sea Intensive Ratings Compared to SRB Multiples
(Retention Rate in Percent)

RATING	FIRST TERM (Zone A)					SECOND TERM (Zone B)					THIRD TERM (Zone C)				
	FY79	FY80	FY81	FY82	FY83*	FY79	FY80	FY81	FY82	FY83*	FY79	FY80	FY81	FY82	FY83*
BT-Boiler Technician	35 5	27 5	35 6	42 6	40 3.5	50 6	67 6	75 6	73 6	82 4.5	94 -	90 -	95 2	92 2	96 .5
GMT-Gunner's Mate (Missiles)	37 4	24 3	32 2	34 4	50 3	55 4	43 4	84 4	86 6	72 3.5	100 -	93 -	90 3	94 3	93 1
WT-Hull Technician	22 2	19 1	19 1	33 3	34 2.5	45 2	53 2	61 2	69 4	74 2	87 -	90 -	93 1	93 1	96 0
QM-Quartermaster (Navigation)	20 0	20 0	19 0	39 1	40 .5	43 0	53 0	64 0	83 3	79 1.5	93 -	88 -	93 0	94 0	94 0
OS-Operations Specialist (Radarman)	20 2	16 1	43 6	44 6	40 4.5	44 1	54 2	79 6	82 6	96 4.5	90 -	90 -	96 2	96 2	96 .5
All Navy	38	37	42	50	55	45	51	57	63	66	91	92	94	95	97

* FY 1983 Data through June 1983

Navy states that Career Sea Pay is also having a positive impact on attracting and retaining officers at sea and in the Navy. Evidence of this, other than through the field interviews, is not readily available as yet. Officers are ordered to sea when volunteers are not available, but to a great extent they vie for these sea billets for career enhancement. Table 26 reflects the available data on retention. These data do not really give a clear picture of any impact from Career Sea Pay because officer retention data are not determined until two years after minimum service requirement. Thus, FY 1983 is the first time retention data will reflect the revised impact of Career Sea Pay and FY 1984 will be the first full year to observe results.

Table 26
Historical and Projected Retention Rates*
Navy Officers
(Percent)

<u>COMMUNITY</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83**</u>
Surface Warfare	31	39	42	43	45
Pilot	31	30	42	49	57
Naval Flight Officer	60	71	65	73	74
Nuclear Submarine	42	36	33	39	42

*Note: Officer Retention Rates are computed using minimum service requirement (MSR) as follows:
(MSR + 2 years) divided by (MSR minus 1 year)

** FY83 Rates are projected for year based on actual data through June 1983.

In summary, Navy sea manning has improved. Career Sea Pay is attracting personnel to sea jobs and retaining them when they get there. Field interviews support this view. Officers, enlisted personnel and their commanders stressed the positive effects of the pay as recognition for undertaking the rigors of sea duty. While specific skill shortages still exist, the Navy reports that aggregate manning at sea has reached 100 percent. As the economy improves, the sea manning and retention situation must be closely monitored for changes.

E. APPROPRIATENESS OF CAREER SEA PAY. Career Sea Pay is proving to be effective though some maintain the money could be better spent on the Selective Reenlistment Bonus (SRB). Career Sea Pay, however, is designed to attract and retain people of all ratings for sea duty. The Selective Reenlistment Bonus (SRB), on the other hand, is targeted to manning shortfalls. Members eligible for the bonus need not be serving aboard ship to receive the payment.

Kleinman, in recent work at the Center for Naval Analyses (CNA), concluded his examination of the relative merits of Sea Pay and reenlistment bonuses by stating:

"There is no a priori reason for selecting either sea pay or bonuses as the primary career incentive. They both serve a purpose, and both probably improve total retention and sea duty." 25

In other recent CNA studies, Goldberg stated:

I conclude that sea pay is always cost-effective relative to reenlistment bonuses for achieving the objective of increasing the manning of sea billets. For an equal outlay, each policy has the same effect on end strength. However, by increasing the number of voluntary extensions to sea duty and hence the sea/shore rotation ratio, sea pay leads to a greater increase in manning at sea. Moreover, sea pay requires the creation of fewer costly shore billets. Therefore, sea pay leads to a greater benefit at lower cost. 26

The above evaluation particularly applies if SRBs are constrained by the ceiling currently imposed or if Career Sea Pay continues to increase voluntary extensions at sea.

The trade-off between use of targeted bonuses and across-the-board Career Sea Pay must continue to be monitored to ensure a proper balance. In particular, if the Fifth Quadrennial Review of Military Compensation recommendation to eliminate the SRB ceiling is adopted or if extensive requests for continued sea duty decline considerably, the use of a different mix of SRBs and Career Sea Pay may be appropriate.

While evaluating the appropriateness of various Sea Pay proposals for the Navy in June 1980, the General Research Corporation made the following observation on other CNA work:

The Kleinman estimates of improved retention at sea as sea pay rates are increased and the Warner model estimates of improved career retention and reduced accession requirements suggest efficiencies that are extremely important to the Navy. Based on these CNA models and the research in this project, the anticipated results of increased sea pay can be summarized as:

- ° Enhanced combat capability through
 - Improved retention
 - Quantity
 - Quality
 - General overall motivation
- ° Significant cost savings
 - Reduced recruiting
 - Reduced training
 - Reduced PCS moves
 - Reduced attrition

... It should also be noted that the estimates do not cover other significant areas of potential savings that may include:

- ° Reduced rotation base requirements
- ° Reduced advanced training
- ° Reduced reenlistment bonuses 27

Much of the above has been proved accurate as Career Sea Pay has taken hold in the Fleet, although the Navy has discovered that as petty officer inventory approaches authorizations the personnel costs have initially increased, offsetting some of the projected cost savings. That is, retention of personnel at the authorized higher grades has led to higher pay and allowances.

Another issue pertaining to the appropriateness of Career Sea Pay is the cost savings which accrue by deploying ships overseas in lieu of homeporting those units overseas. The Navy has nearly 70,000 men deployed at any one time (and over 9,000 Marine Corps personnel) with few dependents. Table 27 displays Service active duty members and dependents in foreign overseas areas. There is a cost entailed in maintaining dependents in overseas areas. Navy sailors, however, indirectly bear the brunt of these cost savings in personal hardships of separation from community and friends. Payments of Career Sea Pay in recognition of these hardships and the associated arduous duty may be more cost effective and practical than moving dependents to overseas locations.

Table 27
Active Military and Dependents
in Foreign Overseas Areas²⁸
(as of 30 September 1982)

<u>Status</u>	<u>Army</u>	<u>Navy</u>	<u>Air Force</u>	<u>USMC</u>	<u>Total DoD</u>
Active Military Overseas:					
- Ashore	267,138	33,804	118,166	28,966	448,094
- Afloat		70,702		9,688	80,390
Total Military	267,138	104,506	118,166	38,674	528,484
Dependents In Foreign Overseas Areas	190,054	35,097	114,139	8,355	347,645
Ratio of Dependents To Military	.71 :1	.34 :1	.97 :1	.22 :1	.66 :1

F. PUBLIC, PRIVATE AND FOREIGN NAVY SEA PAY COMPARISON. Although the decline of the U.S. merchant fleet reduces to some degree that sector's draw from Navy forces, it is still appropriate to examine public sector positions requiring equivalent experience. Additionally, since the Navy trains personnel in naval skills which are transferable to the private sector, that category also deserves some attention.

Personnel with sea experience are able to find employment in offshore oil rigs, in the NOAA Corps ships, in the merchant marine force, and as technical representatives for companies doing business with government in naval related areas--often embarked in Navy ships--sometimes the same ship in which they served on active duty.

The first look at comparative compensation is found in Table 28. Taken from a research effort by the General Research Corporation, the bulk of which is included at Appendix J, this data cites other seafaring occupations. It shows a six-month deployment and compares salaries of a Navy Chief Petty Officer (E-7) to a technical representative, a crane operator on an oil rig and a junior NOAA engineer. Assumptions are shown as footnotes. During that six-month period the Navy E-7 compensation including Career Sea Pay is lower, although adding the U.S. average annual Variable Housing Allowance (VHA) of \$1,369 would raise the pay.

Table 28
Comparative Analysis of Compensation by
Selected Seafaring Occupations
for Six-Month Period 29

	JOURNEYMAN TECHNICAL REPRESENTATIVE	CRANE OPERATOR OIL DRILLING RIG AT SEA	JUNIOR ENGINEER NOAA	NAVY E-7 12 YRS OF SERVICE
BASIC PAY ^a	\$18,858 ^b	\$ 4,095 ^b	\$ 8,147	\$ 7,950
SEA PAY	4,556 ^c			1,590 ^d
PER DIEM	4,050 ^e			
POINTS	495 ^f			
ROOM AND BOARD		2,250 ^g	4,500 ^g	
OVERTIME		4,504 ^h	2,210 ⁱ	
VALUE OF EMPLOYMENT DURING OFF-DUTY TIME		1,365 ^j		
DIRTY WORK			141 ^k	
PENALTY PAY			133 ^l	
BASIC ALLOWANCE FOR QUARTERS				1,876
FAMILY SEPARATION ALLOWANCE II				180
TOTAL	\$27,959	\$12,214	\$15,131	\$11,596

^aBased on 180 days of employment (6 months), except for crane operators who work 7 days on and 7 days off.

^bMid-point of pay scale.

^cEstimated at 25% and 20% of base pay for 5 months and 1 month, respectively, and rounded.

^dEstimated to have 6 years of sea duty.

^e\$22.50 per day for 180 days.

^f\$2.75 per day for 180 days.

^gEstimated at \$25 per day (per reference 29).

^hOvertime estimated at 44 hours of 84 hours worked in a shift.

ⁱEstimated at 12 hours a week for 13 weeks @ \$14.16 per hour.

^jEstimated at 1/3 value of regular time compensation.

^kEstimated at 2 hours per week for 13 weeks @ \$5.41 per hour.

^lEstimated at 2 hours per week for 13 weeks @ \$5.11 per hour.

There are other competitive draws for skilled and experienced seagoing personnel. During shipyard overhauls or new equipment installations, private sector companies work side-by-side with sailors. These private companies are able by observation to determine quality and to make job offers. The draw to fields like electronics, computers, and sophisticated air and weapons systems are often publicized. Table 29 looks at other less glamorous skills that are important in keeping a ship operational. The data show the basic military compensation of a Navy E-5 compared to similar private and public sector skills. Using a 60-hour work week, the Navy member's compensation for equivalent work hours is less than half that for civilian counterparts.

Table 29
Annual Earnings Comparison of U.S.
Private Sector and U.S. Navy Sea Personnel³⁰
at an Assumed 60-hour Workweek - 1982/83 Data

		ANNUAL EARNINGS - 60-HOUR WEEK		
	JOBS	NAVY (OCT 82) ENLISTED GRADE	BUREAU OF LABOR STATISTICS (JUL 82) NATIONAL	U. S. GOVT WAGE GRADE (JAN 1983) NATIONAL
NAVY	BUREAU OF LABOR STATISTICS	E-5 ^a	AVERAGE ^b	AVERAGE
HULL MAINTENANCE TECHNICIAN	CARPENTER, MAINTENANCE	16,994 ^a	40,040	33,998 ^c
MACHINERY REPAIRMAN	MACHINE TOOL OPERATOR	16,994	43,862	32,578 ^d
MACHINIST MAINTENANCE	MACHINE TOOL OPERATOR	16,994	43,862	33,998 ^c
MACHINERY REPAIRMAN MACHINIST'S MATE	MECHANIC MAINTENANCE	16,994	41,059	35,454 ^e
ELECTRICIAN'S MATE	ELECTRICIAN MAINTENANCE	16,994	43,644	35,454 ^e
HULL MAINTENANCE TECHNICIAN	PIPEFITTER MAINTENANCE	16,994	44,772	35,454 ^e
MACHINERY REPAIRMAN	TOOL AND DIE MAKER	16,994	44,153	NO DATA

^a Basic Military Compensation (BMC) of E-5 with 4 years Service, married, no children. The addition of Career Sea Pay for 2 years sea duty (at \$125 per month), Variable Housing Allowance (\$77.13 per month - CONUS average) and Family Separation Allowance (FSA II) for six months of the year (at \$30 per month) would increase this by \$2,606 annually to \$19,600 before considering the tax advantage.

^b Bureau of Labor Statistics Occupational Earnings in All Metropolitan Areas, July 1982, Number 83-3. Assumed time and a half for overtime.

^c Grade 9, Step 2

^d Grade 8, Step 2

^e Grade 10, Step 2

As for officers, the draw to the civilian maritime sector is small but present, particularly for Coast Guard and NOAA officers who have more exposure to the civilian maritime forces. However, during Navy field interviews, it was evident that the increased focus on surface warfare qualifications has also made officers more aware of the maritime sector. Several officers mentioned this as a job source. Table 30 compares officer earnings with the merchant marine and with the Military Sealift Command salaries.

Table 30
Merchant Marine/Military Sealift Command Earnings
Compared to Navy Officer

Master Military Sealift Command aircraft carrier equivalent sized vessel	Master private industry CVA equivalent sized vessel	Captain (over 22) aircraft carrier C.O.
Base Pay 94,703 ^a	Base Pay \$123,114	Base Pay 44,291 ^b
Overtime 15,988	Overtime 18,066	Overtime 0
Quarters 0	Quarters 0	BAQ/VHA* 7,616
Food 0	Food 0	BAS 1,178
\$110,691	\$141,180	Sea Pay 3,720
		Flight Pay 3,720
		Responsi- bility Pay 1,800
		\$62,325
Master Military Sealift Command destroyer sized vessel	Master private industry destroyer sized vessel	Commander (over 16) destroyer C.O.
Base Pay 76,661 ^a	Base Pay \$86,627	Base Pay 34,662 ^b
Overtime 12,940	Overtime 14,623	Overtime 0
Quarters 0	Quarters 0	BAQ/VHA* 7,175
Food 0	Food 0	BAS 1,178
\$89,601	\$101,250	Sea Pay 3,180
		Flight Pay 3,720
		Responsibi- lity Pay 1,200
		\$51,115

^a Overtime for Military Sealift Command and private industry masters is based on 25 hours per month, 43 weeks per year. Base pay of Military Sealift Command masters is now limited by Congressional pay ceiling to \$63,800 annually. Ceiling does not restrict overtime pay. Pay ceiling has no effect on private industry salaries.

^b Assumes individual has dependents and is homeported in Norfolk.

Foreign navies also pay Sea pay generally in the form of additional cash payments.³¹ The following highlights some of the variance in foreign navy sea compensation:

1. The Federal Republic of Germany, Canada, and Australia pay a fixed amount of Sea Pay to all ranks. Australia differentiates between married and single personnel. Sea Pay for West Germans is tax exempt.

2. Three countries, France, Sweden and Japan, pay variable amounts as a function of base pay, rank or vessel type.

3. Canada pays all ranks a fixed C\$120, (about \$103 US) which increases to C\$170 (about \$145 US) after 10 years sea duty. There is a casual sea duty allowance of C\$6 up to the maximum monthly rate for temporary duty at sea.

4. Israel pays a supplemental allowance for sea duty.

5. Salary levels in the United Kingdom's system are competitive with civil service work requiring similar skills. British seafarers receive "sea pay" within the basic salary structure.

6. Both British and Australian seagoing personnel also receive a "Hard Lying Allowance" applicable to certain sea time. In the Australian Navy this goes to members below commodore who are at sea in a vessel for more than 72 hours. The payment is A\$2.05 daily (about \$2.30 US). This is in addition to the annual seagoing allowance of A\$1059 married/A\$750 for single personnel (about \$1059 US and \$841 US, respectively).

7. Australian Navy seagoing personnel also receive seven additional pays leave per year.

8. Overall Sea Pay rates range from nominal amounts in the United Kingdom to a high of 27.5 percent of base pay, by rank, in Japan for duty in warships (22 percent in support vessels). France increases base pay by 20 percent for sea duty.

9. All of the foreign navies reviewed compensate personnel on the basis of assignment to sea duty.

G. CAREER SEA PAY RATES AND ELIGIBILITY. Although the new Career Sea Pay rates have been in effect for only about two and one-half years, in that time the Consumer Price Index has gone up 15.9 percent, which erodes the purchasing power of the Sea Pay dollar by about 14 percent.³² To restore this purchasing power in FY 1983 would require about \$35 million.

Another way to examine the current Career Sea Pay is to compare the rates to basic pay at time of implementation and now. The intent of Navy had been to structure the revised rates as a percentage of basic pay to be approximately 20 percent of basic pay for enlisted personnel and

about 10 percent for officers. During staffing of the legislative proposal the rates were changed to fixed amounts approximating that percentage.³³ Table 31 contains comparisons of basic pay and Career Sea Pay rates for January 1981 and currently for enlisted personnel. As can be seen, except for E-4, E-8 and E-9, the Career Sea Pay rates are still close to 20 percent of basic pay.

Table 31
Career Sea Pay Rates Compared to Basic Pay
for Enlisted Personnel
(January 1981 - January 1983)

Pay Grade	YOS	Years Sea Duty	Monthly Sea Pay	Monthly Basic Pay Jan 81	% Sea Pay Of Basic	Monthly Basic Jan 83	% Sea Pay Of Basic
E-4	3	2	\$125	\$ 675	18.5%	\$ 793	15.8%
E-5	5	3	175	748	23.4	906	19.3
E-6	10	5	215	944	22.8	1143	18.8
E-7	15	7	265	1138	23.3	1385	19.1
E-8	19	8	290	1349	21.5	1641	17.7
E-9	24	10	310	1659	18.7	2019	15.4

Since many comparisons are frequently done to Regular Military Compensation (RMC), Table 32 provides this for Career Sea Pay using the same assumed length of service and creditable sea time. Interestingly, when using RMC, only the rates for E-4 and E-9 appear to be out of proportion.

Table 32
Career Sea Pay Rates Compared to Regular Military
Compensation for Enlisted Personnel*
(January 1981 - January 1983)

Pay Grade	Annual Career Sea Pay	Average RMC Jan 81	% Sea Pay of RMC	Average RMC Jan 83	% Sea Pay of RMC
E-4	\$1,500	\$13,158	11.4%	15,362	9.8%
E-5	2,100	14,885	14.1	17,713	11.9
E-6	2,580	17,851	14.5	21,594	11.9
E-7	3,180	20,903	15.2	25,431	12.5
E-8	3,480	24,101	14.4	29,370	11.8
E-9	3,720	28,793	12.9	35,003	10.6

*Uses "Assume all cash RMC Pay Grade Averages" Tables of OSD (M,RA&L) MP&FM Directorate of Compensation Selected Military Compensation Tables October 1982 Pay Rates and 1980 equivalent. Regular Military Compensation is defined as Basic Pay, BAQ, BAS, Housing Allowance and the tax advantage. The housing allowance element was added in December 1980; Variable Housing Allowance (VHA) is used.

In view of the continued positive effects of Career Sea Pay as noted earlier in this analysis and the fact that for most personnel the rates are still close 19 percent of basic pay, the rates are currently considered adequate. Increases for E-9's with 10 years creditable sea service will be addressed in this section while reviewing eligibility criteria.

During the review of Career Sea Pay, two other issues associated with rates and eligibility criteria arose. The first of these is the termination of the sea pay tables after 12 years of creditable sea time. Table 33 is a breakdown of members who are receiving Career Sea Pay by creditable years of sea service. Over a third of the E-9's on sea duty and almost twenty percent of the E-8's on sea duty have reached the maximum level on the rate table (i.e., 12 years creditable sea duty).

Table 33

Chief Petty Officers Receiving Career Sea Pay
by Creditable Years of Sea Service
(September 1982)

Sea Duty Years	Chief Petty Officer E-7		Senior Chief Petty Officer E-8		Master Chief Petty Officer E-9	
	Eligible	Receiving	Eligible	Receiving	Eligible	Receiving
Less Than 1	1,232	256	309	54	107	16
1	1,561	259	386	37	140	12
2	1,972	400	410	65	142	13
3	2,358	629	518	97	206	19
4	2,513	784	553	153	188	26
5	2,692	1,033	557	118	200	40
6	2,646	1,042	624	149	200	39
7	2,513	1,010	614	168	197	48
8	2,308	981	654	192	209	39
9	1,861	818	676	220	228	39
10	1,500	662	593	239	240	74
11	1,153	544	466	163	219	70
12	1,904	903	1,049	388	801	251
Totals	26,213	9,321	7,409	2,043	3,077	686

Table 33 displays each year of creditable service to show the distribution of the sea service and, particularly for E-9's, to emphasize the number in the 12th-year cell compared to those in other years. The numbers of E-7, E-8 and E-9's eligible for sea duty who are in the current maximum year of service is also significant. However, this issue is not isolated to the E-7/8/9 community. Table 34 displays this in an abbreviated form for all pay grades. Warrant officers, limited duty officers and O-5/O-6 pay grades also have a significant number of personnel in this highest cell.

Table 34
Navy Personnel at Maximum
Sea Service Credit (12 years)
(September 1982)

<u>Pay Grade</u>	<u>Number Drawing At Year 12</u>	<u>Total Receiving</u>	<u>Percent in 12th Year Cell</u>
O-6	95	251	37.9%
O-5*	102	1,080	9.4
O-4**	51	1,904	2.7
O-3	56	1,664	3.4
O-2E	33	527	6.3
O-1E	2	319	0.6
W-4	39	86	45.4%
W-3	92	265	34.7
W-2	83	461	18.0
E-9	251	686	36.6%
E-8	388	2,043	19.0
E-7	903	9,321	9.7
E-6	542	20,424	2.7
E-5	49	33,925	0.1
E-4	2	44,272	0.0

*38% of LDO O-5's are at 12 years or greater creditable sea duty.

**47% of LDO O-4's are at 12 years or greater creditable sea service.

If it is desirable to properly compensate for extensive periods of time at sea during a career and in view of the need for experienced personnel in key sea billets, additional increments in the pay tables are warranted to maintain a proper incentive. Table 35 provides an extension to the current Career Sea Pay tables which would correct this matter:

Table 35
Proposed Career Sea Pay Table Extension (\$ Monthly)

<u>Pay Grade</u>	<u>Over 10</u>	<u>11</u>	<u>12</u>	<u>14</u>	<u>16</u>	<u>18</u>	<u>20</u>
O-6	-	N/C*	-	325	340	355	380
5	-	N/C	-	285	300	315	340
4	-	N/C	-	270	280	290	300
3/3E	-	N/C	-	260	270	280	290
2/2E	-	N/C	-	250	260	270	280
1/1E	-	N/C	-	250	260	270	280
W-4	320	330	350	370	390	410	410
3	N/C	N/C	330	350	370	390	410
2	N/C	N/C	310	330	350	370	390
1	N/C	N/C	N/C	N/C	N/C	N/C	N/C
E-9	320	330	350	370	390	410	410
8	N/C	N/C	320	340	360	380	400
7	N/C	N/C	N/C	330	350	370	390
6	265	265	280	295	310	325	340

*N/C = No change

A second eligibility issue is that there are many personnel experiencing the greater-than-normal rigors of sea duty who are not in receipt of any Career Sea Pay. These members are E-1 to E-3's, O-1 and O-2's, O-7's and above, and those officers who have less than three years creditable sea time. These groups were excluded from drawing Career Sea Pay for the following reasons:

1. as a cost savings measure;
2. because most are within minimum obligated service;
3. it is not viewed as appropriate to provide additional pay to junior enlisted personnel when many believe the country should return to the draft and when the juniors are receiving better pay than draftees would get; and
4. to allow officers with less than three years' sea time to draw pay would allow too many officers to draw the pay - and again increase cost.

Those who support Sea Pay for lower enlisted and officer personnel believe that one of the stated purposes of Sea Pay is to recognize the unusually arduous nature of duty at sea. If this is, indeed, one of the major reasons for paying Sea Pay, then it is clearly inconsistent and, in fact, improper to provide the pay to selected personnel and completely deny it to nearly half of those who go to sea, all of whom are experiencing similar or (in some cases) even greater discomforts and hardships. Sea Pay is the only pay of its kind that prohibits eligibility based on grade. Submarine Duty Pay, for example, goes to all those who serve aboard submarines, no matter the individual's grade or service

obligation. The same is true of Certain Places Pay (if revised to include officers as recommended by this QRMC), under which all members performing the same type of duty receive some form of compensation. On the other hand, while personnel in these categories may be experiencing the same arduous duty associated with duty at sea, Career Sea Pay, as its name implies, is intended more as a career incentive. Therefore, this is the dominant factor when targeting for eligibility. Additionally, increasing the number of eligibles by extending pay authority to these junior personnel would increase the cost by up to \$45 million annually, with about \$25 million as the most likely cost. To incur such cost for the purpose of paying a category of individuals who, in the private sector, would be considered on an apprenticeship level, is not warranted.

Related to this issue of junior personnel is the dual requirement for officer personnel both to be in pay grade O-3 and to have accrued three years' creditable sea duty before eligibility to draw Career Sea Pay. The intent of Congress appears to have been to preclude officers from drawing the pay until they had served an appropriate period of apprenticeship at sea. The three-year minimum will accomplish this. For those O-2's who accrue three years' creditable sea service prior to regular promotion to O-3, it is an inappropriate penalty to preclude payment of Career Sea Pay. Additionally, in this period of improved retention, promotion flow points may change. This has already occurred in the NOAA Corps. Thus, officers may be beyond their obligated service and have up to 4-1/2 years of sea service before promotion to O-3. Congress stated that they were reinstating officer sea pay "because of the arduous duty involved in long deployments and because of retention problems among Navy officers in certain skills."³⁴ Surface warfare O-2's, less than a 1000 of whom would be affected by this change, continue to have retention rates well below 50 percent. During field interviews Navy and Coast Guard Officers often cited this dual eligibility requirement as an issue of concern. We believe elimination of the pay grade requirement (with retention of the three-year sea service requirement) is warranted.

VI. FINDINGS.

A. Career Sea Pay, with some eligibility exceptions, is adequately achieving its dual purpose of compensating for the hardships of sea duty and selectively improving retention of seagoing personnel.

B. The current structure and rates of Career Sea Pay were effective 1 January 1981. The equivalent purchasing power of the pay has eroded somewhat. Additionally, the economy and unemployment rates may have affected the reaction of personnel to the pay such that it has had a more positive effect than the rates would dictate.

C. It is appropriate to establish incremental rates beyond 12 years through 20 years of sea duty to properly compensate those personnel with such creditable sea time for the hardships of sea duty. A new maximum of \$410 is sufficient.

D. Commissioned officers should be eligible for Career Sea Pay after accruing three years' creditable sea service, regardless of pay-grade.

VII. RECOMMENDATIONS.

A. The effectiveness and value of Career Sea Pay should be monitored closely and reexamined in about two years.

B. Establish incremental Career Sea pay rates for up to 20 years of sea duty with a maximum rate of \$410 per month. (Table 35 contains the detailed rates.)

C. Include in the legislative proposal provisions to pay Career Sea Pay to commissioned officers after they accrue three years' creditable sea duty, regardless of pay grade.

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15. Doering, Zahava D. and Hutzler, William P., Descriptions of Officers and Enlisted Personnel in the U. S. Armed Forces, A Reference for Military Manpower Analysis, (RAND-2851-MRAL), Santa Monica, CA: The Rand Corporation, March 1982, Table 29, p. 46. (This and succeeding uses of the data from the reference were completed by extracting Service data from the document. To obtain data for "Sea Duty" personnel, the survey computer data base was used to qualify responses for only those Navy personnel assigned to ships. Ms. Gwen O'Neill and Mr. Mark Howell of the Defense Manpower Data Center supervised and completed this task in a most helpful and expeditious manner. Note: Copies of the survey questionnaires forms are located in the following reference: Doering, Zahava D.; Grissmer, David W.; Hawes, Jennifer A.; and Hutzler, William P. 1978 DoD Survey of Officers and Enlisted Personnel; Survey Design and Administrative Procedures (RAND Note 1458-MRAL), Santa Monica, CA: The Rand Corporation, April 1980. The Survey was renamed "1978-79" to reflect early 1979 data collection. The short form name of the survey is "1978-1979 DoD Survey.")

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17. Hale, CAPTAIN Thomas M., U.S. Navy, and Pappas, Ms. Linda D., "The Unique Hardships of Sea Duty," Annapolis, MD: U.S. Naval Institute Proceedings, November 1980, p. 68.

18. Ibid., pp. 69-70.

19. Op. cit., Doering, Zahava D. and Hutzler, William P., Table 31, p. 48.

20. Ibid., Table 32, p. 49.

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LOCATIONS/UNITS VISITED DURING 5TH QRCM FIELD INTERVIEWS
(During which Career Sea Pay was discussed*)

- Naval Military Personnel Center, Washington, DC
- Naval Station, Norfolk, VA
 - USS Hammerhead (SSN-663)
 - USS Arthur W. Radford (DD-968)
 - USS Eisenhower (CVAN-69)
- Naval Amphibious Base, Little Creek, VA
- Coast Guard Air Station, Elizabeth City, NC
 - National Strike Force
- Naval Air Station, Oceana, VA
- Naval Amphibious Base, Coronado, CA
- Naval Air Station, North Island, San Diego, CA
 - USS Kitty Hawk (CVA-63)
- Naval Station, San Diego, CA
 - USS Tarawa (LHA-1)
- Submarine Base, San Diego, CA
 - USS Haddock (SSN-621)
 - Commander, Submarine Group Five
- Naval Air Station, Miramar, CA
- Marine Corps Air Station, El Toro, CA
- Naval Station, Charleston, SC
 - USS Wainwright (CG-28)
 - Off Crews - SSBNs
 - Commander, Submarine Group Six
- Submarine Base, Kings Bay, GA
- USCGC Courageous, Baltimore, MD

*Frequently other Special and Incentive Pays were discussed as the primary topic.

Current Career Sea Pay Rates*

MONTHLY CAREER SEA DUTY PAY RATES—COMMISSIONED OFFICERS—EFFECTIVE 1 JAN 1961

Pay Grade	Years of Sea Duty									
	Over 3	Over 4	Over 5	Over 6	Over 7	Over 8	Over 9	Over 10	Over 11	Over 12
O-1 (note 1)	\$150	\$160	\$185	\$190	\$195	\$205	\$215	\$225	\$225	\$240
O-2 (note 1)	160	160	185	190	195	205	215	225	225	240
O-3	150	160	185	190	195	205	215	225	225	240
O-4	185	190	200	205	215	215	220	225	225	240
O-5	225	225	225	225	230	245	250	260	265	265
O-6	225	230	230	240	255	265	280	290	300	310

NOTE:

1. Commissioned officers with at least 4 years of active service as enlisted members or as noncommissioned warrant officers.

MONTHLY CAREER SEA DUTY PAY RATES—WARRANT OFFICERS—EFFECTIVE 1 JAN 1961

Pay Grade	Years of Sea Duty												
	1 or Less	Over 1	Over 2	Over 3	Over 4	Over 5	Over 6	Over 7	Over 8	Over 9	Over 10	Over 11	Over 12
W-1	\$130	\$135	\$140	\$150	\$170	\$175	\$200	\$250	\$270	\$275	\$280	\$290	\$300
W-2	150	150	150	150	170	260	265	265	270	275	280	290	310
W-3	150	150	150	150	170	270	280	285	290	300	310	310	310
W-4	150	150	150	150	170	290	310	310	310	310	310	310	310

MONTHLY CAREER SEA DUTY PAY RATES—ENLISTED MEMBERS—EFFECTIVE 1 JAN 1961

Pay Grade	Years of Sea Duty						
	1 or Less	Over 1	Over 2	Over 3	Over 4	Over 5	Over 6
E-4	\$ 50	\$ 60	\$125	\$160	\$175	\$175	\$175
E-5	60	70	140	175	185	190	205
E-6	125	135	170	190	210	215	225
E-7	135	145	215	235	255	260	265
E-8	165	180	225	255	265	270	280
E-9	175	195	235	265	280	290	310

Pay Grade	Years of Sea Duty						
	Over 7	Over 8	Over 9	Over 10	Over 11	Over 12	
E-4	\$175	\$175	\$175	\$175	\$175	\$175	
E-5	220	220	220	220	220	220	
E-6	235	245	255	255	255	255	
E-7	265	270	275	280	300	310	
E-8	285	290	300	310	310	310	
E-9	310	310	310	310	310	310	

* Tables are extracted from Department of Defense Military Pay and Allowances Entitlements Manuals (DoDPM) Washington, DC: Department of Defense, 1 January 1967 (updated to 1983).

DETAILED VERSION OF THE HISTORICAL PERSPECTIVE
CAREER SEA PAY

Aside from certain bonuses and "bounties" starting in the early days of our country, some of which were also paid to seamen, Sea Pay is the oldest special pay. It dates back to the Act of March 9, 1813, during the War of 1812, and was then a special appropriation of extra pay for officers and crew of ships, rather than sea duty pay as such.¹

The Act of March 3, 1835 (4 Stat. 755) established for the first time a differential for Navy personnel for duty at sea. Of that period in history, the Third Quadrennial Review of Military Compensation noted:

The general philosophy prevailing at that time considered that sea duty was the normal duty for a sailor, and that when he was ashore he was not fully performing his function; hence, officers and men were paid at a higher rate when on sea duty.²

For example, the 1835 Act authorized lieutenants to receive \$1,800 annually for sea service and \$1,500 for other duty. Boatswains, gunners and sailmakers (warrant officers) received \$750 annually for sea service, \$600 for frigate duty (also at sea) and \$500 for other duty.³ A misconception of the above-noted pay philosophy is that the Navy "shore" pay was less than the prevailing rates of pay for Army officers. In fact, the Navy "shore" pay was about the same as that of Army officers and greater than the pay of Marine Corps officers.⁴

As for enlisted personnel, it should be noted that throughout much of the early Navy history enlisted sailors were recruited mainly as needed to man a ship as it was readied for sea. Pay was based on the amount required for that type "hiring." There was, in effect, little or no enlisted shore duty; thus, no sea pay differential was needed. Even officers were frequently furloughed when the ship put back into port. Hence, there existed a pay category of leave/awaiting orders.

The Act of June 1, 1860 (12 Stat. 23) provided a short-lived but noteworthy development in the evolution of Sea Duty Pay. The length of an individual's cumulative sea service was recognized as a pay factor in some officer grades. The Act continued the within-grade differentials linked to the officer's duty status. It also prescribed pay steps based on length of sea service for the grades of lieutenant and warrant boatswain, gunner, carpenter, and sailmaker. This lasted only two years for the grade of lieutenant and until 1870 for the warrant officer grades.⁵ The concept was again adopted by the Navy more than a century later in 1978.

The Act of May 13, 1908 (Pub. L. No. 60-115, 35 Stat. 127) terminated the duty status differentials of the 1835 Act for commissioned Navy officers and set up pay rates based on grade and length of service. However, "it also formally established the principle of 'extra' compen-

sation for sea duty by entitling officers to an additional 10 percent over their basic pay while performing such duty."⁶ Warrant officers and mates continued under the differential system. The 1908 Act did not similarly authorize enlisted personnel Sea Pay, but it did provide a flat 10 percent increase in pay for Navy enlisted and a pay increase to Army and Marine Corps enlisted personnel by revisions of their pay tables. The impact of these changes gave Navy enlisted personnel at least a 10 percent differential over the enlisted in other Services, although this increment was not separately identified as Sea Pay.

Most Sea Pay and all Foreign Duty Pay were terminated by the Joint Services Pay Act of 1922 (Pub. L. No. 67-235, 42 Stat. 625) and were not paid again until World War II. The one exception was the sea duty differential for Navy warrant officers which continued for another seven years. The Act of February 16, 1929 terminated this pay to the warrant community after 94 continuous years.⁷

As a temporary wartime measure, the Act of March 7, 1942 (Pub. L. No. 77-490, 56 Stat. 148) revived Sea Pay (and Foreign Duty Pay). It included enlisted personnel and warrant officers at an additional 20 percent over their basic pay and other officers at an additional 10 percent. A few months later these provisions were enacted into the Pay Readiness Act and remained in effect through the war, becoming part of permanent law in 1945.

The "Hook" Commission of 1948 recommended that Sea (and Foreign Duty) Pay be abolished for officers and modified to a scale not indexed to basic pay for enlisted personnel. The Hook Commission's rationale was expressed as follows:

The Commission has concluded that sea duty for naval personnel, as well as oversea duty for the Army or Air Force, although probably involving more inconvenience than military activity ashore or at home, is a part of their normal career... Officers, especially, do not deserve extra pay for this type duty, since the pay recommended for them is apportioned to their relative responsibility as executives and administrators, regardless of their site of operation...

For enlisted personnel, the Commission proposed a flat rate increase, as in keeping with the accepted industry practice for disagreeable or unpleasant work and as a morale factor...⁸

The Hook Commission recommendations were partially adopted in the Career Compensation Act of 1949 (Pub. L. 81-351, 63 Stat. 802). The Military Compensation Background Papers describe this Act and the subsequent period as follows:

Instead of the single flat rate proposed by the [Hook] Commission, it prescribed monthly rates that ranged from \$8 for the lower enlisted grade to \$22.50 for the top grade. When set in 1949, these rates approximated 10 percent of enlisted basic pay. Over the years, however, and with the concomitant increases in military pay rates and the general price level, the real value of sea duty pay to its various recipients declined, until it represented less than 2 1/2 percent of basic pay in 1979. As a result, sea duty pay came to be regarded, at least until recently, as a "token" payment and, as such, had little incentive value for affected personnel.⁹

The Strauss Commission in their 1953 report said the following about Sea Pay:

Additional compensation for sea and foreign duty has been part of the military pay system for over a century. In the war of 1812, extra pay was provided for sea duty and this was continued in the Navy... Sea and foreign duty pay is one of the most important and workable morale aids that the services can utilize to compensate enlisted personnel for increased living costs as a result of sea and foreign duty for arduous and unpleasant duty performed away from home and loved ones. This pay has been considered necessary by the services since the early days of their history - it is just as necessary and important today.¹⁰

In 1971 the Second QRM, while it did not study Sea Pay in detail, noted that:

Sea pay deserves mention at this point. The need for an improved incentive to mitigate the arduous requirements of a career at sea has long been recognized. It has further been recognized that the present coupling of sea pay with Certain Places Pay [Foreign Duty Pay] was an inappropriate grouping as their purpose is not similar.¹¹

Beginning in 1967 and continuing throughout the 1970's, Navy pursued proposed revisions to a Sea Pay plan.¹² At times these efforts were subordinated to the major effort to revise officer flight pay and solve nuclear submarine manning problems. During all of the deliberations concerning Sea Pay, the Navy consistently maintained a "recognition-of-arduous-duty" philosophy. The Office of Management and Budget (OMB) and other interested groups unsuccessfully attempted to tie Sea Pay to retention and/or recruitment efforts and to create a bonus-type Sea Pay. Sea duty was viewed as arduous duty and a long-term problem best addressed by a long-term, career-oriented solution.¹³

In 1975, the Third QRMCM, did not address the retention aspects of Sea Pay. They instead placed Sea Pay in a category with Hostile Fire Pay and Certain Places Pay and said the three pays were uniquely related to conditions of service.¹⁴

In April 1976 the Defense Manpower Commission highlighted as one of its findings the following:

There are valid and sufficient reasons for the development and implementation of a new sea pay plan. The new sea pay should be structured to induce personnel in undermanned skills to volunteer for and/or remain on sea duty when the needs of the Service so require.¹⁵

Nearly two years later, in January 1978, OSD responded to this DMC recommendation in an official report, stating:

Sea pay is required to create a monetary distinction between service at sea and service ashore and thus increase tolerance for repetitive sea duty tours in the course of a Navy career. Sea duty has a unique and all-pervasive impact upon Navy men. As a factor in recruiting, the "adventure and excitement" associated with duty at sea among uninitiated potential recruits works to the advantage of the Navy. Once the realities of arduous duty onboard a naval warship are experienced, however, this sea duty aura dissipates, and the prospect of repetitive reassignment to duty at sea over a career becomes a decisive disincentive when considering Navy reenlistment...

Sea pay, however, is not the vehicle to address the problem of Navy manpower shortages. Because of the high correlation between manpower shortages or imbalances and sea duty, DoD has concluded that the Selective Reenlistment Bonus system is the proper way to address retention in the Navy.¹⁶

In 1978 the Navy modified its position that the sole purpose of Sea Pay was the "recognition-of-arduous-duty"; the retention aspects were incorporated as an added purpose of the pay when a new legislative proposal was prepared. Addressing this proposal, the Department of Defense Appropriation Authorization Act of 1979 (Pub. L. No. 95-485, 92 Stat. 1620-1621) adopted an entirely new special pay for career sea duty (Career Sea Pay) with an effective date of 1 October 1978. The concept adopted in this legislation was based on the philosophy that those who serve longer at sea are the ones that ought to receive more Career Sea Pay. Officers continued to be excluded from drawing Career Sea Pay. The legislation provided a three-year phased increase as well as saved-pay provisions for those years. An enlisted member in pay grade E-4 or above, who had served more than three years on sea duty, drew the new pay

on an ascending scale with amounts dependent upon total cumulative years of sea time. The rates ranged from \$25 per month to a high of \$55 per month. Under the phase-in the maximum rate was to increase to \$100 beginning October 1, 1981. However, prior to this date two other legislative changes were enacted.

Commenting on the change to a dual purpose for Sea Pay, the July 1982 revision to the Military Compensation Background Paper notes,

In a Departmental Recommendation, DoD noted that sea pay had historically been a means of recognizing and compensating those who were willing to serve under the unique conditions of service associated with sea duty...." Because of the "unattractive" features associated with the "unique conditions" of sea duty and the "competition for quality manpower among the services and with civilian industry," the Department recommended a new career sea pay program to achieve "stabilized manning [of Navy ships] with experienced personnel." ... In short, DoD's "career sea pay" proposal may appropriately be regarded as an incentive pay designed to meet manpower management goals. Congress agreed with the need to meet such goals and... adopted the DoD proposal...¹⁷

The 1 October 1978 rates, however, were not sufficient to overcome retention and sea manning deficiencies which the Services were facing. One problem with the pay was noted in a U.S. Naval Institute Proceedings article:

The act was designed as an incentive for the career force by specifying the threshold of entitlement to E-4's with more than three years of sea duty. By discriminating to this extent, it is not particularly cost effective because of the small numbers it reaches. In the fiscal year 1980, it is estimated that only 38,700 out of approximately 148,800 [sic] enlisted personnel on board ships will receive the new pay ¹⁸

Given the apparent poor effect of Sea Pay and increasing loss of experienced personnel, the Navy leadership in 1980 pushed for both compensation and Sea Pay changes.

The Military Personnel and Compensation Amendments of 1980 (Pub. L. No. 96-343, 94 Stat. 1124), commonly called the Nunn-Warner Bill, provided an acceleration of the three-year phase-in to be effective September 1, 1980 and added a 15 per cent increase to the rates. When the amendment was adopted by the Senate, the purpose noted was "to provide retention incentives to Navy personnel coming to the end of their first term of enlistment."¹⁹ The cited reason in the conference report was "the Navy's shortage of petty officers-particularly those with six to twelve years of years of Service."²⁰ (Sea Pay/Career Sea Pay Rates for 1949 through this change appear on page 619.)

The current Career Sea Pay legislation was established in December 1980 through the Military Pay and Allowances Benefits Act of 1980 (Pub. L. No. 96-579, 94 Stat. 3364-3366). With rates effective January 1, 1981 (as shown in the table at Appendix B), this Act adopted an entirely new structure of special pay for "career sea duty." The new law retained the philosophy of pay for cumulative years of duty at sea and extended the entitlement to officer personnel, except those of pay grades O-1 and O-2. (Those officers with greater than four years enlisted service are entitled to the pay--grades O-1E and O-2E.) The rates of Career Sea Pay were increased substantially. The Navy, in response to a GAO request to explain the rate development and rationale, provided the following:

The Career Sea Pay tables were originally structured as a percentage of basic pay--approximately 20 percent of basic pay for enlisted members and about 10 percent of basic pay for officers. This was based on the positive experiences of the sea pay program in World War II and the immediate post-war years when sea pay was structured in this way. During the staffing process leading to the enactment of the new pay structure the rates were changed from a percentage of basic pay to fixed amounts approximating the percentage for that pay cell. 21

In addition, members who serve more than 36 consecutive months of sea duty are entitled to a Career Sea Pay Premium of \$100 a month. Based on 37 U.S.C. 305a, implemented by Executive Order 11157, Sea Duty entails duty performed by a member:

a. While permanently or temporarily assigned to a ship, ship-based staff, or ship-based aviation unit and while serving on a ship the primary mission of which is accomplished while underway or while serving as a member of the off crew of a two-crewed submarine; or

b. While permanently or temporarily assigned to a ship or ship-based staff and while serving on a ship the primary mission of which is normally accomplished while in port, but only during a period that the ship is away from its homeport for 30 consecutive days or more.

The reference to two-crewed submarines in Executive Order 11157 is a further change which was made to Career Sea Pay since the major restructuring and rate increases of 1980. The Uniformed Services Pay Act of 1981 (Pub L. 97-60, 45 Stat. 996) included a special provision for the "off crew" of two-crew fleet ballistic missile submarines to allow these personnel to draw career Sea Pay. Previously, only the crew embarked in the submarine drew the pay.

Rates of Sea Pay
(Effective 1949-1978 - For Saved Pay until
30 September 1981)

<u>Pay Grade</u>	<u>Monthly Rate</u>
E-1 & E-2	\$ 8.00
E-3	9.00
E-4	13.00
E-5	16.00
E-6	20.00
E-7 to E-9	22.50

Rates of Career Sea Pay
(Effective 1 October 1978)

Applies to Personnel in Pay Grades E-4 through E-9 with more than 3 years' creditable Sea Duty while on Sea Duty.

<u>Years of Sea Duty</u>	<u>Monthly Rate</u>
Over 3 Years	\$25.00
Over 5 Years	35.00
Over 12 Years	55.00

Rates of Career Sea Pay
(Effective 1 September 1980)

Applies to Personnel in Pay Grades E-4 through E-9 with more than 3 years' Sea Duty while serving on Sea Duty.

<u>Years of Sea Duty</u>	<u>Monthly Rate</u>
Over 3	\$29.00
Over 5	40.00
Over 7	52.00
Over 9	63.00
Over 10	75.00
Over 11	86.00
Over 12	115.00

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2. Ibid., p. 1.
3. Pay Table, Register of the Commissioned and Warrant Officers of the Navy of the United States, including Officers of the Marine Corps for the Year 1836, pp. 1-11.
4. Ibid., p. 11; A Compendium of the Pay of the Army from 1785 to 1888, pp. 38-49. (These two publications and other referenced Pay Tables are bound and maintained in the OASD (MRA&L) MP&FM Compensation library under the title Military Pay Tables, 1785 - 1940 and related Bibliography of Compensation Sources, Volumes 1 and 2.)
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CAREER SEA PAY RECIPIENTS
Fiscal Year 1982 (Actual) by Service*
(Detailed Breakout of Table 2)

PAY GRADE	NAVY	MARINE CORPS	ARMY	DOD SUB-TOTAL	COAST GUARD	NOAA	TOTAL	% BY GRADE
O-6	237	2	-	239	18	5	262	0.2
O-5	1,046	1	-	1,047	49	14	1,110	1.0
O-4	1,801	4	-	1,805	86	14	1,905	1.7
O-3/3E	1,677	-	-	1,681	124	10	1,815	1.6
O-2E	466	-	-	466	321**	0	787	0.7
O-1E	377	-	-	377	-	-	377	0.4
W-4	72	4	3	79	37	-	116	0.1
W-3	212	4	22	238	74	-	312	0.3
W-2	470	9	50	529	112	-	641	0.6
W-1	-	6	14	20	-	-	20	0.0
OFFICERS				DOD				
SUB-TOTAL	6,358	30	89	[6,481]	821	43	7,345	6.5%
% OFFICERS OF TOTAL FOR SERVICE	6%	1%	21%	6%	12%	100%	6.5%	-
E-9	578	45	-	623	41	-	664	0.6
E-8	1,862	84	1	1,947	69	-	2,016	1.8
E-7	8,612	216	14	8,842	865	-	9,707	8.6
E-6	18,914	358	53	19,325	1,500	-	20,825	18.4
E-5	30,514	710	95	31,319	1,750	-	33,069	29.2
E-4	36,071	1,758	167	37,996	1,685	-	39,681	35.0
ENLISTED				DOD				
SUB-TOTAL	96,551	3,171	330	[100,052]	5,910	-	105,962	93.5%
% ENLISTED OF TOTAL FOR SERVICE	94%	99%	79%	94%	88%	-	93.5%	-
GRAND TOTAL	102,909	3,205	419	DOD [106,533]	6,731	43	113,307	100.1%
% OF SERVICE PERSONNEL DRAWING SEA PAY	19% of Navy	2% of USMC	1% of ARMY	5% of DOD	19% of Coast Guard	11% of NOAA	-	
% THIS SERVICE OF TOTAL SEA PAY POPULATION	90.8%	2.8%	0.4%	DOD [94.0%]	5.9%	0.0%	100%	

*Number of recipients in total man-years.

**Coast Guard O-2E number also includes officers in pay grade O-1E.

CAREER SEA PAY COST (Including Premium Pay)
Fiscal Year 1982 (Actual) by Service
(in \$000)
(Detailed Breakout of Table 3)

PAY GRADE	NAVY	MARINE CORPS	ARMY	DOD SUB-TOTAL	COAST GUARD	NOAA	TOTAL	% BY GRADE
O-6	857	5	-	862	67	15	944	0.4
O-5	3,315	3	-	3,318	150	34	3,502	1.6
O-4	4,761	9	-	4,770	225	30	5,025	2.3
O-3/3E	4,101	7	-	4,108	245	18	4,371	2.0
O-2E	1,181	-	-	1,181	578	-	1,759	0.8
O-1E	903	-	-	903	-	-	903	0.4
W-4	259	7	8	274	138	-	412	0.2
W-3	756	7	80	843	287	-	1,130	0.5
W-2	1,587	16	188	1,791	228	-	2,019	0.9
W-1	-	9	36	45	-	-	45	0.0
OFFICERS								
SUB-TOTAL	17,720	63	312	[18,095]	1,918	97	20,110	9.2%
% OFFICERS OF TOTAL FOR SERVICE								
	9%	2%	43%	9%	11%	100%	9.3%	-
E-9	2,160	102	-	2,262	152	-	2,414	1.1
E-8	6,697	184	4	6,885	257	-	7,142	3.3
E-7	28,593	379	44	29,016	3,114	-	32,130	14.9
E-6	49,534	552	116	50,202	4,230	-	54,432	25.2
E-5	50,922	550	108	51,580	4,305	-	55,885	25.8
E-4	39,682	1,131	140	40,953	3,235	-	44,188	20.4
ENLISTED								
SUB-TOTAL	177,588	2,898	412	[180,898]	15,293	-	196,191	90.8%
% ENLISTED OF TOTAL FOR SERVICE								
	91%	98%	57%	91%	89%	-	90.7%	-
GRAND TOTAL								
	195,308	2,961	724	[198,993]	17,211	97	216,301	99.9%
% THIS SERVICE OF TOTAL SEA PAY COST								
	90.3%	1.4%	0.3%	[92.0%]	8.0%	0.0%	100.0%	

Note on Appendix E Data: The reader must be advised to approach the above figures with caution. Navy finance data indicated that in the last month of FY 1982 about 14,000 more members drew this pay than the number used as the basis for this table which, for Navy, was obtained from their budget section. Differences may result from partial man-months, draws of the pay briefly during a month due to temporary additional duty status, fluctuations in promotions (particularly to E-4) or variations in the original intended use of the data. As for the other Services, Coast Guard does not have a centralized or automated finance system. Army did not commence payment of Career Sea Pay until July 1982, but made payments retroactive to 1 January 1981. Total FY 1982 annual data are based on Army payments in the last quarter.

NAVY SHIP AND AIRCRAFT SQUADRON CHANGES*
Between FY82 and FY84
(Detailed Breakout of Table 5)

<u>TYPE UNIT*</u>	<u>FY 1982</u>	<u>FY 1984</u>	<u>CHANGE</u>
Trident Submarines	2	4	+2
Attack Submarines	96	98	+2
Battleships	0	1	+1
Cruisers	27	29	+2
Destroyers	84	68	-16
Frigates	82	95	+13
Amphibious ships	4	6	+ 2
Underway replenishment ships	52	53	+ 1
Fleet support ships	43	49	+ 6
Fighter-attack SQDNs	60	65	+ 5
Fleet Support SQDNs	16	18	+ 2
Readiness SQDNs	25	27	+ 2
Other active tactical/ mobility SQDNs	23	25	+ 2
 <u>Summary of all Units</u>			
Total Ships	513	526	+13
Total Aircraft Squadrons	255	266	+11

*List only contains type units where changes will be occurring.
Thus, the list does not add up to total units in summary.

Source of Data: Department of Defense, OASD (M,RA&L), FY 1984 Force
Readiness Report, Volume III: Personnel and Training Readiness (C),
(Draft) April 1983, p. 42 (Unclassified Paragraph).

NAVY CAREER SEA PAY RECIPIENTS AND
MEAN/MEDIAN PAY AMOUNTS
FISCAL YEAR 1982
(Detailed Breakout of Table 8)

Pay Grade	Navy Man Years ^a	Total Numbers ^b	Mean Annual Amount (\$)	Median Annual Amount (\$) ^c
O-6	237	500 ^d	\$1,850	\$1,800
O-5	1,046	1738	1,899	1,800
O-4	1,801	3047	1,615	1,600
O-3/3R	1,677	2664	1,340	1,200
O-2E	466	791	1,716	1,800
O-1E	377	406	1,480	1,400
Commissioned Officer Sub-Total	5,604	9,146	1,604	1,500
W-4	72	141	2,089	1,900
W-3	212	477	2,036	1,800
W-2	470	624	2,044	1,800
Commissioned Warrant Officer Sub-Total	754	1,242	2,046	1,800
All Officers	6,358	10,388	N/A	N/A
E-9	578	1180	2,117	2,000
E-8	1,862	3257	2,137	2,100
E-7	8,612	13,662	2,168	2,400
E-6	18,914	31,289	1,683	1,600
E-5	30,514	52,559	1,080	800
E-4	36,071	52,835 ^e	575	400
Enlisted Sub-Total	96,551	154,782	1,153	800
Grand Total	102,909	165,170	\$1,185	\$ 800

Notes:

- a. Man year are as reflected for Navy in Table 3 and Appendix B
- b. Total number of personnel includes partial years due to reasons such as PCS transfers, temporary duty or embarked aviation units
- c. Rounded to nearest \$100
- d. O-6 Total includes 3 officers who were promoted to O-7 during the year at which time Sea Pay terminated.
- e. E-4 total numbers include 2,373 E-3's, 388 E-2's and 145 E-1's who drew Career Sea Pay in FY 1982. Presumably they were reduced in rate from a qualifying paygrade during the course of the year. Minor end-year record reporting delays (of promotions) could also be part of the reason.

REASONS RESPONDENTS BELIEVE ARE MOST
IMPORTANT FOR JUSTIFYING SEA PAY*

Reason for Justifying Sea Pay	Assigned Order of Importance			Cumulative Total (%)
	1st (%)	2nd (%)	3rd (%)	
Long working hours (above and beyond those expected of Navy and other military personnel not serving at sea).	30	21	13	64
Separation from family and friends	20	14	14	48
Hazardous nature of sea duty (hazards above and beyond those experienced by Navy and other military personnel not serving at sea).	13	11	10	34
Loss of COMRATS, BAQ, and other pays and allowances available only to shore-based personnel	11	10	9	30
Harsh living conditions (tight spaces, inadequate and insufficient facilities).	7	14	14	35
Lack of privacy and personal freedom (inability to escape shipmates, supervisors and military environment, regardless of duty status).	6	9	11	26
Unpleasant working conditions (noise, heat, inaccessability of machinery and equipment).	3	8	9	20

*As extracted in part (not all reasons surveyed are included above) from a report by Claude Braunstein, and Emanuel P. Somer, Enlisted Men's Attitudes towards Alternative Methods of Sea Pay Compensation, (NPRDC Special Report SR-78-1) San Diego, CA: Navy Personnel Research and Development Center, January 1978, p. 12.

RETENTION OF NAVY ENLISTED PERSONNEL IN TEN
MOST CRITICAL RATINGS AT SEA
AND SRB MULTIPLES

RATING	FIRST TERM (Zone A)					SECOND TERM (Zone B)					THIRD TERM (Zone C)				
	FY79	FY80	FY81	FY82	FY83*	FY79	FY80	FY81	FY82	FY83*	FY79	FY80	FY81	FY82	FY83*
BM-Boatswain's Mate	25% [#] 0 ^{&}	21% 0	24% 0	34% 0	42% 0	57% 0	59% 0	70% 0	83% .5	83% 0	90% 0	91% 0	93% 0	96% 0	97% 0
CNC-Gunner's Mate (Guns)	15 0	16 0	18 0	34 2	40 1.5	52 0	59 0	67 0	81 1	94 0	92 0	91 0	96 0	95 0	99 0
Fire Control Technician FTC-Guns	34 2	32 1	24 0	40 3	50 3	49 1	47 1	58 0	81 3	83 3	86 0	90 0	93 0	92 0	94 .5
FTM-Missiles	47 5	41 6	32 5	33 6	27 4	69 5	53 6	74 6	64 6	66 4	85 2	80 2	90 2	94 2	93 .5
EW-Electronics Warfare	58 2	34 2	13 0	36 4	51 3.5	43 1	54 2	43 2	82 5	76 3.5	76 1	90 1	77 5	95 5	96 2.5
STC-Sonar Technician (Surface)	47 4	39 4	22 3	32 3	33 2	41 2	56 4	62 4	72 6	71 4	87 0	89 0	92 1	93 1	91 1
IC-Interior Communications	24 2	27 1	22 1	32 3	30 2.5	46 1	53 2	62 2	74 4	78 2.5	81 1	84 1	92 1	92 1	93 0
AX-Aviation ASW Technician	34 1	34 0	22 0	30 3	63 4.5	41 0	43 0	42 0	72 3	74 3	92 0	76 0	83 0	60 0	98 0
AZ-Aviation Maintenance	36 0	29 0	40 0	52 0	60 1	52 0	58 0	59 0	79 1	85 0	88 0	95 0	94 0	98 0	100 0
AME-Aviation Boatswain	28 2	23 1	33 2	41 2	41 .5	54 1	35 0	81 3	60 3	80 1.5	81 2	100 2	98 2	100 2	100 0
All Navy	38	37	42	50	55	45	51	57	63	67	91	92	94	95	97

NOTES:

- * FY 1983 rates through June 1983 only
- # First Line - Retention
- & Second Line - SRB Multiple

BACKGROUND ON COMPENSATION FOR SELECTED
SEAFARING OCCUPATIONS

A. TECHNICAL REPRESENTATIVES.

Basic Pay.

The company under review has two grades of technical representatives that go to sea with the Navy aboard aircraft carriers. They are: journeyman-level grade 7, and senior level grade 8. The grade 8 requires some lead or supervisory activity.

Monthly basic pay scales are as follows:

	<u>Minimum</u>	<u>Mid-Point</u>	<u>Maximum</u>
Journeyman	\$2,416	\$3,143	\$3,870
Senior	2,655	3,451	4,248

Incentives.

While at sea, the base rate of pay is increased by 25%; 20% while in port. In addition, a \$22.50 per diem is paid during the tenure on board a carrier.

An added incentive consists of a bonus at the end of each cycle. The bonus is based on earning one point for each day spent at sea. The monetary value of each point earned is displayed below:

<u>Points</u>	<u>Point Value</u>
0-220	\$2.75
221-440	3.50
441-660	4.00
661-880	4.50
881-1100	5.00

Weekly pay scales have been adjusted by multiplying them by 4.5 to make them more comparable to Navy monthly pay scales. Weekly pay scales are: Journeyman, \$537, \$699, and \$860; Senior \$590, \$767, and \$944 for minimum, mid-point, and maximum, respectively.

Data effective: 12 April 1983.

B. OIL RIG WORKERS.

Work Schedule.

Oil rig workers generally work an equal number of on/off days, i.e., 7 days on, 7 days off. Each rig hold two shifts, each working a 12-hour day for total of 84 hours for each shift worked. Overtime is assumed to be 44 hours for each shift worked. Overtime rates are 150% of straight-time rates.

Travel To and From the Rig.

Oil rig workers are paid minimum hourly wages while traveling from their assembly point on shore to the rig and for the return from the rig to shore. This is usually less than 2 hours each way. However, this time is used in accumulating time to be counted as overtime. No wages are paid for time spent in getting to the assembly point.

Room and Board.

Oil rig workers are furnished room and board for time spent on the rig.

Bonuses and Savings.

As a general rule, bonuses are not a part of oil rig workers' compensation. Some companies offer savings incentives by matching up to 5%-6% of a worker's pay that he puts into savings. The funds are unavailable to the employee for specified periods, depending on the savings plan.

Hourly Wages While Actually Working.

	<u>Low</u>	<u>Mid</u>	<u>High</u>
Shift Foreman	\$13.00	\$13.00	\$14.00
Floorman	9.00	9.50	10.00
Crane Operator	10.00	10.50	11.00
Roustabout	7.50	8.00	8.50

C. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA);
SEAFARING CIVILIAN (WAGE MARINE) EMPLOYEES.

Note: NOAA Corps officers receive the same basic pay and allowances as commissioned officers of other Uniformed Services. The following discussion pertains only to NOAA's civilian wage marine employees.

Basic Salaries.

Salaries of NOAA's civilian wage marine employees are governed by 5 USC 5348, which requires that pay be set in accordance with prevailing rates and practices in the maritime industry, as nearly as is consistent with the public interest. Salaries vary greatly, ranging from \$5316 per month for a licensed Master to \$877 per month for a messman. Since their salaries derive from maritime rates established for work at sea, wage marine employees do not receive any type of sea pay differential. Wage marine employees are, however, eligible for five types of premium pay under those conditions set forth in the various labor-management agreements, as follows:

1. Overtime Pay.

Overtime is a rate payable for all work performed in excess of 8 hours per day and on Saturdays and Sundays, and holidays. Overtime rates vary from \$44.13 per hour to \$8.69 per hour, depending on the position, and, with two exceptions, are payable both in port and at sea. Dayworking Masters and Chief Engineers receive no overtime compensation for work while at sea. In port, they receive compensatory time for overtime worked on an hour-for-hour basis, or may receive overtime pay in lieu of compensatory time if the time off cannot be realistically used.

2. Penalty Pay.

Penalty time is a rate payable for certain types of work which fall outside the scope of regularly prescribed duties, or which are inherently undesirable. Rates vary from \$8.61 per hour for licensed Masters and Mates to \$8.01 per hour for licensed Engineers and Electronics Technicians to either \$5.11, \$4.99, or \$3.87 per hour for all other employees, depending upon their positions. These rates are in addition to base pay.

3. Dirty Work Pay.

Personnel required to perform certain undesirable tasks, such as working in boilers, cofferdams, and condensers, are entitled to dirty work pay. Rates are \$5.41 per hour during regular working hours, in addition to base pay, and \$12.26 per hour, or the overtime rate if higher, otherwise.

4. Tank Cleaning Pay .

Personnel required to enter fuel oil tanks, oily bilges, or similarly contaminated areas are entitled to tank cleaning pay. Rates are either \$5.11, \$4.99, or \$4.82 per hour depending on the employee's rating, plus base pay or overtime, as appropriate.

5. SCUBA Diving Pay .

Employees required to dive as a part of their official duties receive dive pay at the rate of \$17.87 per hour actually spent in the water, in addition to base pay or overtime, as appropriate.

SUMMARY OF RESPONSES

Career Sea Pay

- Issues:
1. Career Sea Pay is, with some exceptions, achieving its dual purpose of compensating for the hardships of sea duty and selectively improving retention of personnel.
 2. Career Sea Pay value has eroded somewhat; it should be closely monitored and reexamined in about two years.
 3. Incremental rates beyond 12 years through 20 years should be established with a new maximum of \$410 per month.
 4. Commissioned officers should be eligible for Career Sea Pay after accruing three years creditable sea service, regardless of pay grade.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs except for the recommended maximum rate and consideration of some sort of methodology to protect incentive value of Career Sea Pay. Stated that to restore its value to 1981 levels requires a 24 percent increase in rates now. A method triggering legislative response to this deterioration is necessary. As to maximum rate, Navy response to preliminary draft recommended \$500 per month.
Air Force	Deferred to views of the Department of the Navy.
Coast Guard	Concurs. Made specific note of agreement with recommendation to reexamine Career Sea Pay in two years.
Public Health Service	Concurs.
NOAA	Concurs.
Joint Chiefs of Staff	Concurs.

LEGISLATIVE IMPLICATIONS

1. Amend Title 37 U.S.C. 305a(b) to revise and expand rate table to change rates for years 10, 11 and 12 for certain pay grades and include rates for years beyond 12 years of accrued sea duty to 20 years of sea duty as follows:

Proposed Career Sea Pay Table
Revision and Extension (\$ monthly)

<u>Pay Grade</u>	<u>Over 10</u>	<u>11</u>	<u>12</u>	<u>14</u>	<u>16</u>	<u>18</u>	<u>20</u>
E-6	265	265	280	295	310	325	340
E-7	N/C*	N/C	N/C	330	350	370	390
E-8	N/C	N/C	320	340	360	380	400
E-9	320	330	350	370	390	410	410
W-1	N/C	N/C	N/C	N/C	N/C	N/C	N/C
W-2	N/C	N/C	310	330	350	370	390
W-3	N/C	N/C	330	350	370	390	410
W-4	320	330	350	370	390	410	410
O-1/1E	N/C	N/C	N/C	250	260	270	280
2/2E	N/C	N/C	N/C	250	260	270	280
3/3E	N/C	N/C	N/C	260	270	280	290
4	N/C	N/C	N/C	270	280	290	300
5	N/C	N/C	N/C	285	300	315	340
6	N/C	N/C	N/C	325	340	355	380

*No Charge

2. Amend Title 37 U.S.C. 305a(b) to eliminate footnote 1 to the Commissioned Officers Rate Table, which allows only those commissioned officers in paygrades O-1 and O-2 with at least four years of active service as enlisted members or as non-commissioned warrant officers to receive Career Sea Pay. All commissioned officers would henceforth be entitled to receive the pay if they have accrued three years of creditable sea duty and are otherwise eligible by assignment.

37 U.S.C. 308
SPECIAL PAY: REENLISTMENT BONUS

SELECTIVE REENLISTMENT BONUS

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SELECTIVE REENLISTMENT BONUS

I. PURPOSE. The purpose of the Selective Reenlistment Bonus (SRB) is to serve as "a retention incentive paid to enlisted members serving in certain selected military specialties to reenlist for additional obligated service. The bonus is intended to generate additional reenlistments in critical military specialties characterized by retention levels insufficient to sustain the career force at an adequate level." [17]

II. DATA SOURCES. In conducting the analysis, several sources of data were used. These include Title 37 U.S.C.; House and Senate reports concerning authorization and appropriation for SRB; OSD and Service implementing directives; computer files relating to enlisted bonus management submitted to OSD annually by the Services during the budget process; computer files from the Bureau of Labor Statistics relating to employment/unemployment and wages; and Service remarks concerning appropriate use of reenlistment bonuses. Finally, work done by RAND, the Center for Naval Analysis (CNA) and others was used in lieu of new data analysis when appropriate. Since they have no enlisted personnel, Public Health Service and NOAA are not authorized to pay the reenlistment bonus. The Services (except for Coast Guard) are required to annually submit to OSD computer files containing manning data, reenlistment data, bonuses and training data. Most of the analysis in this paper used these files as the primary data source. Services augmented this information by explaining unique features of bonus management for their respective application. Limited data from the Marine Corps were available for inclusion in some of the analysis accomplished in this paper. Detailed data were not available from the Coast Guard, although some summary information was provided. Extensive field interviews with SRB recipients provided a valuable framework for understanding aspects of bonuses relating to personal finance and reenlistment behavior.

III. HISTORICAL PERSPECTIVE.

A. PRE-1949. Since the first Congress in 1791 authorized reenlistment "bounties" of \$6.00, only the depression years of 1933 through 1939 saw no reenlistment bonuses being paid. During these hard times enlisted personnel were competing for vacancies in the career force. Until 1833 all reenlistees received the same bonus amount, but increases occurred from time to time as the bonus eroded in value. In March 1833 bonuses equaled two months' pay. By 1854 the lump-sum bonus was shifted to a monthly addition of \$2.00 to regular pay for first reenlistments and \$1.00 to subsequent reenlistments, provided the reenlistment occurred with no break in service. In 1854 the Marines were authorized to use the bonus and by 1855 the Navy was authorized a similar system, but paid a lump-sum bonus of 3 months' pay for an immediate reenlistment of 3 years. In 1899 the Navy reenlistment period was extended to 4 years and the lump-sum bonus increased to 4 months' regular pay. The Navy also paid \$1.36 in addition to monthly pay for reenlistment agreements similar to those used by the Army and Marines. Between 1908 and 1922 other changes occurred; lump-sums and continuous monthly bonuses based on 10% of pay were authorized for the Army for each 5 years of consecutive service.

Meanwhile, the Navy changed its fixed 4-year reenlistments for lump-sum bonus to allow 2- or 3-year reenlistments with correspondingly smaller lump-sums. Monthly bonuses were continued for consecutive reenlistments.

Hence, the Marines used the Army continuous pay concurrent with the Navy lump sum. In 1922 a Service-wide reenlistment bonus system was instituted that paid bonuses based on grade and length of previous term of enlistment, placing a \$200 ceiling on the Navy but none on the Army or Marines. Monthly bonuses based on continuity of service were replaced by longevity raises in pay without regard to continuity; however, step increases for longevity varied in amount between Services. As previously mentioned, bonuses were suspended from 1933 to 1939. In 1945, all bonuses were computed based only on length of previous term, regardless of grade - a departure from the earlier method based on both grade and length of previous term. For a more detailed discussion of these historical developments, see the Military Compensation Background Papers [18].

B. POST-1949.

The present SRB program has evolved from former enlisted retention bonuses. The Career Compensation Act of 1949 (P.L. 81-351) authorized the first of these with three tenets:

1. Dollar amounts of enlisted retention bonuses should be proportionate to the duration of the new term of service;
2. Retention bonuses are an incentive for additional obligation, not rewards for past service; and
3. Bonuses should be limited so that no bonus would be payable for the last years of service.

Under this program, bonuses were computed by multiplying \$10 by the square of the additional years obligated. For a 4 year reenlistment the bonus was $10 \times 4 \times 4 = \$160$, while a 5-year reenlistment was $10 \times 5 \times 5 = \$250$. A person could reenlist for 2 or more years but for no more than 6 years. The bonus could not be paid for service in excess of 30 years; no person could receive more than \$1,440 in a career; and no more than 4 such bonuses could be paid to any one person.

The next iteration called the Regular Reenlistment Bonus (RRB) was implemented in 1954 (P.L. 83-506) to improve upon the effectiveness of the previous plan by putting more money in first-term reenlistments and progressively less in subsequent reenlistments. The bonus under RRB was computed by multiplying the reenlistees' basic pay by $\frac{6}{6}$, $\frac{4}{6}$, $\frac{2}{6}$, or $\frac{1}{6}$ for 1st, 2nd, 3rd, and 4th or subsequent reenlistments, respectively. Instead of 30 years, this bonus could not be paid for obligated service in excess of 20 years. The career ceiling was raised from \$1,400 to \$2,000.

The third iteration, called Variable Reenlistment Bonus (VRB), was designed to address special first-term retention problems beginning in 1965. The Services were experiencing inadequate first-term retention and career manning in some technical, high-training-cost skills. So, in addition to the RRB, a first-term reenlistee received another bonus of up to 4 times the amount already received in RRB. Other skills paid 1, 2, or 3 times the RRB. Non-critical skills were paid RRB but no VRB.

The RRB was paid regardless of manning, and the VRB was paid only to first reenlistment. In May of 1974 the Enlisted Personnel Bonus Revision Act (P.L. 93-277) was passed in an attempt to correct these shortcomings. VRB's were eliminated and replaced with the new Selective Reenlistment Bonus (SRB) payable to any reenlistment occurring before 10 years of service. Members on active duty prior to 31 May 1974 continued to be eligible for a RRB, but it was not authorized for new entrants to military service.

Table 1 shows chronologically the legislative history of the present SRB authority. The authority expired, or nearly expired, six times before new legislation was signed into law. In three cases the legislation actually expired before new authority became law.

Table 1

SRB Authority

<u>Public Law</u>	<u>Date/Name</u>	<u>Description*</u>
P.L. 93-277	10 May 1974 (Armed Forces Personnel Revision Act of 1974)	Established Authority for SRB - Repealed authority VRB/RRB for new entrants.
P.L. 95-57	29 June 1977	Extended termination date from 30 Jun 77 to 30 Sep 78.
P.L. 95-485	1 Oct 1978 20 Oct 1978 (DOD Appro- priations Act of 1979)	SRB Authority Expired. Authority Reinstated. Termination date set at 30 Sep 80.
P.L. 96-342	8 Sep 1980 (DOD Appro- priations Act of 1981)	Extended termination date from 30 Sep 80 to 30 Sep 82. Eligi- bility expanded to allow members with up to 14 YOS (was previously 10). Max bonus increased from 12 to 16 thousand (15 to 20 thousand for enlisted nuclear).
P.L. 96-579	23 Dec 1980 (Military Pay and Allowances Benefits Act of 1980)	Forgave up to 2 years of obligated service for submarine crew extending or reenlisting to retain eligibility for continuous submarine pay in SRB computation.
P.L. 97-60	14 Oct 1981 Pay Act of 1981	Allowed all services to forgive up to 2 years of an extension (never funded except for nuclear submarine enlisted).
P.L. 97-276	2 Oct 1982 Continuing Resolution Authority (FY83) DOD Appropriations Bill	Extended authority to pay SRB from 30 Sep 82 to 17 Dec 82.
P.L. 97-377	21 Dec 1982 Continuing Resolution Authority (FY83) DOD Appropriation Bill	Extended authority from 17 Dec 82 to 31 Mar 83.
P.L. 98-14	30 Mar 83	Extended authority from 31 Mar 83 to 30 Sep 84.

* Descriptions highlight major changes only. Dates are those when signed.
House and Senate approval occurred earlier.

C. BACKGROUND OF PRESENT SRB PROGRAM.

There are 5 criteria for designating a military specialty as one qualifying a reenlistee for receipt of an SRB:

- Serious undermanning in 3 or more adjacent career years.
- Chronic and persistent shortages in total career manning.
- High first-term replacement costs.
- Relatively unattractive skill.
- Essential skill to accomplish the defense mission.

In addition to meeting any one these criteria, there must be a reasonable prospect of enough improvement in retention to justify the cost. OSD has defined the career manning improvement as the expected number of additional career members to be gained as a result of the bonus.

For each skill designated by the Secretary of Defense as being eligible for an SRB, an award level ranging from 0 to 6 is determined for each of 3 reenlistment zones, depending on the desired improvement in number of reenlistments. Zones are defined as follows:

Zone A: 21 months - 6 years

Zone B: 6 years - 10 years

Zone C: 10 years - 14 years

An eligible reenlistee must extend or reenlist in his specialty for at least 3 years. The bonus is computed by multiplying the award level by basic pay by the number of years of additional obligated service. Congress presently authorizes payments of up to \$20,000 for nuclear trained personnel and \$16,000 for all others. Additionally, nuclear personnel may use up to 2 years of an unserved extension as part of the new term of enlistment for purposes of bonus computations, essentially forgiving previous obligated service. The present program is funded so that 50% of the bonus is received immediately and the remainder is provided in equal installments at the beginning of each subsequent year of the new enlistment. The payment method has changed repeatedly over the years, as shown in Table 2.

Table 2
Method of Payment
General

Jun 74 - Dec 74	- lump sum
Jan 75 - Mar 79	- installment
Apr 79 - Jan 82	- lump sum
Feb 82 - Present	- 50% lump sum 50% equal annual

Note: This is a basic schedule subject to unique Service implementation. For example see Army implementation in Table 3. Conversion to modified payment in 82 occurred as a result of Congressional intent of P.L. 97-410, DoD Appropriations Act of 1982. Conversion to lump sum was funded beginning the second half of FY79 in P.L. 95-457, FY79 DoD Appropriations Bill.

Specific timing and implementations varied slightly by service but were quite similar to that of the Army as shown in Table 3. In all Services, obligated service beyond 16 years is not used in bonus computation.

Table 3
Method of Payment
Army

1 Jun 74 - 31 Dec 74
- lump sum and installment
- max 60% could be lump sum
- based on quota to command
1 Jan 75 - 3 Apr 79
- annual installment payments
- for zone A multiple 1, 50% up front <u>remainder</u> on 1st anniversary
- people could request lump sum based on availability of \$ (estimated that 20% got lump sum)
3 Apr 79 - 14 Jan 82
- lump sum payments
- people could request annual installment (only a few did)
14 Jan 82 - present
- 50% lump sum/50% annual equal installment

Other Services generally followed this scheme but no specific documentation was available to substantiate specific payment characteristics.

Table 4 shows the budget dollars for all enlisted attraction and retention incentive since FY66.

Table 4
DoD Bonus and Proficiency Costs (Thousands)
FY66-FY84 (Budget)

Fiscal Year	Regular Reenlistment Bonus	Variable Reenlistment Bonus	Enlistment Bonus	Selective Reenlistment Bonus	Total Bonus	Proficiency Pay	Total Bonus & Pro Pay
1966	155,009	10,696	-	-	165,705	122,000	287,705
1967	168,602	47,437	-	-	216,039	134,571	350,610
1968	125,218	76,406	-	-	201,624	142,985	344,609
1969	140,702	120,356	-	-	261,058	136,583	397,641
1970	162,471	164,564	-	-	327,035	148,309	475,344
1971	168,076	197,101	-	-	365,177	155,108	520,285
1972	149,530	185,317	1,500	-	336,347	169,897	506,244
1973	157,258	182,716	40,917	-	380,891	146,356	527,247
1974	160,656	181,166	43,012	-	384,834	122,254	507,088
1975	101,694	52,337	58,776	129,714	342,521	92,881	435,402
1976	106,869	39,878	68,481	63,939	279,167	38,259	317,426
1977Q	37,100	7,200	12,000	25,200	81,500	9,000	90,500
1977	83,470	26,125	30,295	103,783	243,673	35,500	279,173
1978	35,747	18,561	34,076	149,813	238,197	35,613	273,810
1979	16,853	5,629	42,683	242,356	307,521	37,763	345,284
1980	8,911	-	50,625	330,284	389,820	41,107	430,927
1981	5,290	-	69,370	578,631	653,291	45,317	698,608
1982	1,802	-	106,202	490,932	598,936	47,015	645,951
1983 (Est.)	64	-	135,041	457,912	593,017	48,520	641,537
1984 (Budget)	64	-	157,187	623,941	781,192	48,855	830,047

Data only reflects DOD. US Coast Guard paid 445 and 154 SRB's in FY81 and FY82 respectively. Amounts paid were 315 and 106 thousand.

IV. ANALYSIS. In analyzing the effectiveness of the SRB Program, several questions were addressed:

- Are SRB skills and award levels by zone selected and eliminated efficiently and appropriately?
- Do the traditional improvement factors used in projecting additional reenlistments resulting from application of a bonus accurately reflect reenlistment behavior?
- Do the methods of computing and paying SRBs and recouping un-earned SRBs properly achieve the goals of the SRB program?

The answers to these questions were sought by addressing individual issues related to one or more of these questions. The results of the analysis are presented in the following sections.

A. ELASTICITY OF REENLISTMENTS WITH RESPECT TO BONUSSES.

One of the most important factors in establishing the effectiveness of the SRB program is to determine the relationship between a change in bonuses and the change in reenlistments. Several attempts have been made to formalize this relationship since the introduction of "criticality

factors" into the computation of reenlistment bonuses. The Variable Reenlistment Bonus (VRB) system had 4 award levels to provide a bonus of one, two, three, or four times the Regular Reenlistment Bonus (RRB) that a reenlistee would normally receive. The VRB was paid in addition to the first-term RRB. When the existing SRB program was implemented, 6 award levels were authorized. In both the SRB and VRB, award levels were set based largely on two factors: replacement costs (training) and number of reenlistments desired to fill billets in the next term of service. If the award level is too low, there will likely be insufficient numbers reenlisting to fill more senior billets. Similarly, an award level too high may cause excess reenlistments and stagnate promotions in subsequent years. Thus, it is important to establish award levels accurately. To do so requires a thorough understanding of the relationship between bonus amounts and reenlistment rates. As shown in Table 5, all Services have experienced dramatic strides in reenlistment rates in recent years. During the time since FY79 pay raises and/or economic conditions have generally favored military service over employment in the civilian work force. Reenlistment bonuses represent just one factor influencing the reenlistment decision process. But with reenlistment rates as high as they have been recently, it may be harder to reenlist those remaining few through the application of a bonus. If the distribution of "taste for military service" is unchanged but reenlistment rates move upward, then only the people with the lowest preference for the military can be influenced by a bonus. Bonuses are less effective for such a group. Furthermore, with a large number of people predisposed to reenlistment, a smaller fraction of the SRB dollars are "buying" the undecided individual. Finally, since FY79 there has been no discernable difference between SRB skills and non-SRB skills with respect to the speed and direction of movement of reenlistment rates.

Table 5
Service-Wide Reenlistment Rates

FY	FIRST TERM					SECOND TERM					CAREER				
	AF	N	A	MC	CG	AF	N	A	MC	CG	AF	N	A	MC	CG
79	38	38	40	20	16	60	45	-	-	-	91	91	63	52	65
80	36	37	52	23	27	63	51	-	-	-	92	92	70	50	69
81	43	42	59	27	41	72	57	-	73	-	94	94	76	75	88
82	57	50	58	34	36	81	63	80	75	-	95	95	95	78	82

Note: Format is Air Force/Navy/Army/Marine Corps/Coast Guard. Data not shown were unavailable. Values shown are 100 times the reenlistment rate, which is computed by dividing reenlistments plus extensions of at least 24 months by eligibles plus extensions of at least 24 months. Eligibility is determined by Service policy.

Table 6

**FACTORS FOR ESTIMATING THE IMPROVED FIRST-TERM REENLISTMENT RATE
TO BE ATTAINED FROM AWARD OF VARIOUS LEVELS OF ZONE A
SELECTIVE REENLISTMENT BONUS**

First-Term Reenlistment Rate With No Award		Multiply Reenlistment Rate Without Award by:					
More Than	No More Than	Zone A, Selective Reenlistment Bonus					
		S-1	S-2	S-3	S-4	S-5	S-6
0	10	1.17	1.36	1.59	1.85	2.14	2.48
10	15	1.15	1.33	1.52	1.73	1.97	2.22
15	20	1.14	1.30	1.48	1.66	1.86	2.08
20	25	1.13	1.28	1.43	1.60	1.77	1.95
25	30	1.12	1.26	1.39	1.54	1.69	1.84
30	35	1.11	1.23	1.36	1.48	1.61	1.74
35	50	1.10	1.19	1.29	1.38	1.48	1.57

Table 6. This table comes from a Rand study of VRB effectiveness during the time period 1971 through 1974. It results from the use of Army data in that period. No recent guidance has been developed for use by all Services in estimating the effect of reenlistment bonuses.

DoD Instructions (1304.22 series) contained guidelines for estimating the improvement resulting from a bonus. Table 6 shows the reenlistment rate improvement factors for first-term reenlistments rates. To use this table, the SRB manager must know the reenlistment rate without a bonus, then determine the desired reenlistments to meet personnel objectives; compute the resulting improvement factor; find that value on the appropriate row of the table and pick the bonus level for the corresponding column.

Though the table may serve as a guide, it has several drawbacks. First, for some skills that have been on the SRB program for extended periods, it may be difficult to accurately estimate the "base reenlistment rate," i.e., that which would occur in the absence of a bonus. A possible advantage of this approach is that the table has an implied "awareness" that skills with traditionally low or high reenlistments have improvement factors different from typical skills. However, the model used in developing the improvement factors was not separately calibrated by groupings of the base reenlistment rate. The differences shown are the result of mathematical necessity and not based on observed behavior differences between skills with low and high reenlistment rates caused by distasteful duty or higher value to civilian employment markets.

Second, the data in Table 6 are taken from a Rand Study [2] completed in 1977 using data for FY71, FY73, and FY74. The data came from Army files during the VRB period only. It seems reasonable that improvement factors would vary by Service. In fact, the Rand report did show differences between Services over the same time period, but chose

the Army model because the Army "method of VRB payment" most closely approximated the SRB payment policy (installment) in effect at the time of the study.

Third, no such improvement factor table existed for Zone B and Zone C since VRBs were only a first-term reenlistment incentive and no estimates were made for career members at that time. More recent estimates suggest lower improvement factors for careerists due to:

- higher reenlistment rates for careerists, mathematically necessitating lower improvement factors and
- lower responsiveness to pay changes for more senior personnel.

Fourth, though improvement factors are simple to understand, there have been relatively few studies that use improvement factors as the index to measure SRB effectiveness. Most studies use elasticity of reenlistments with respect to pay (percent change in reenlistments divided by percent change in pay) as the preferred parameter to estimate. Although the Rand report was well done, the current SRB environment is considerably removed from the 1971-1974 VRB environment and warrants detailed review. For example, current reenlistment rates are now off the scale of the OSD table developed when reenlistment rates averaged 20%. Though many independent studies have been conducted since 1977, no DoD-wide comprehensive review has been conducted since that time. Nevertheless, the Services do have more recent data and use it with varying degrees of sophistication. The following analysis begins to address these topics in the current environment.

Several mathematical models have been developed over the years to explain the cause/effect relationship between pay and retention. One study, Hiller [1], used survey responses to explain reenlistment intentions in terms of the demographics and perceptions of those responding to the survey. This study found 20 variables to be significant in explaining reenlistment intentions. These variables were categorized for convenience into compensation, promotion, location, and job satisfaction groupings. The point to be made is that money (compensation) is not the only variable explaining measured reenlistment intention. The conclusion the study indicated was that pay and promotion variables are those most consistently (across Services) and significantly related to reenlistment intentions.

Other studies define the relationship more directly. Instead of focusing on reenlistment intention, these efforts rely on actual (observed) reenlistment behavior under various conditions of pay. The important parameter used to estimate this type of relationship is called the bonus elasticity. It is a number defined to be the percent change in reenlistment probability divided by the percent change in pay intended to induce the change in reenlistment behavior. It can also be interpreted as the percent change in reenlistments induced by a one-percent change in

pay. For example, if the bonus elasticity is 3.0 and the bonus causes a 5% change in pay, we would estimate a 15% change in the reenlistment probability. If the reenlistment rate (probability) is .5, under these circumstances a 5% pay increase caused by a bonus would result in an estimated reenlistment rate of .575, while a 5% decrease in bonus would result in an estimated reenlistment rate of .425. Warner [4] estimated a bonus elasticity at the first reenlistment decision point of 2.42 by calibrating a sophisticated retention model, SCOL (Stochastic Cost of Leaving), to FY79 Navy retention experience, then predicting the effect on first-term retention of a 10 percent increase in second-term pay. In another study Enns, Nelson, and Warner [4] calculated a first-term elasticity of 2.71. These methods relied on observations of actual behavior, but Hiller [1] also attempted to estimate bonus elasticities on the basis of survey questions about hypothetical bonuses and reenlistment intentions. It was estimated that for second termers, bonus elasticities range between 1.0 and 2.0, depending on years of service and branch of service.

In the QRM study, a methodology similar to the one mentioned above (Enns et al.) but less sophisticated was used to determine the effectiveness of the SRB program. This method allows one to estimate the change in reenlistment rates resulting from a change in the SRB multiple. Empirical data from FY79 through FY81 provided to OSD by each Service in accordance with DODI 1304.22 were used to estimate these relationships. Files used include those submitted for POM 82, 83, and 84. For each skill in the SRB program these files consist of a record containing, among other variables, skill identification data, reenlistments and eligibles by years of service, and strength versus requirements by years of service.

Two functional forms of the reenlistment model were estimated using these data.

Method 1: The first was a logistic regression model where the assumed relation is:

$$r = \frac{1}{1 + e^{-(b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3)}}$$

where: r = zone A reenlistment rate,

X_1 = zone A SRB multiplier,

X_2 = dummy (yes/no) variable 1 = Army skill
0 = non Army,

X_3 = dummy variable 1 = NAVY skill
0 = non NAVY.

The hypothetical relationship is somewhat arbitrary but has frequently been tested in analyses of reenlistment behavior for several reasons. First, the form of the relationship guarantees that predicted values of reenlistment rates will fall in the 0-1 interval. A simple linear relationship does not offer this guarantee. Second, the form guarantees that as base reenlistment rates move to the extremes (closer to 0 or 1), bonus effectiveness goes down. The implication is that there is a diminishing return on the SRB investment at extreme reenlistment rates, but it does not necessarily imply that the level of compensation ceases to be important. This is an interaction that is intuitively appealing but absent from simpler models. Of course, the model here is certainly not the only model with these properties, but was chosen for its simplicity and popularity. Since the function on the left is not defined at 0 or 1, reenlistment rates less than .05 were assumed to be .05 and rates above .95 were set to .95. Table 7 shows the parameter estimates. Also skills with fewer than 25 members eligible to reenlist were dropped from the estimation.

Table 7
Zone A Reenlistment Parameter Estimates
Method 1

<u>Variable</u>	<u>Coefficient</u>	<u>T Statistics</u>	<u>Significance</u>
Intercept	-.214	-4.697	.0001
SRB Multiplier	.153	5.396	.0001
Navy	.261	3.06	.0027
Army	-.475	-7.684	.0001

Note: The implied first-term elasticity is 1.65 at a base reenlistment rate of 46%; a one-level change in bonus multiple represents a 5% change in RMC.

Method 2: Though the confidence levels for Method 1 estimates are very high, that is, all parameter estimates are very significantly different from zero, the data did not fit this model well. The coefficient of determination was only 3%, implying that other variables are more useful for explaining variance in group reenlistment behavior. In fact, another functional form (Method 2) was found to fit the data better and was used throughout the succeeding analysis. In Method 2, the dependent variable represents a comparison between the reenlistments for adjacent years of each skill in the SRB program. The idea is to compare reenlistment rates within the SRB program for all 3 years. Two observations for each skill were calculated by comparing the first and second year, and the second and third year rates. The functional form estimated was a linear model interactively applied:

$$PCR = b_0 + b_1*PCP + b_2*PCE + b_3*ARMY + b_4*NAVY + b_5*T$$

where:

PCR = absolute % change in reenlistment rate,

PCP = % change in pay (bonus induced),

PCE = % change in eligibles,

ARMY = dummy variable to indicate if observation was for an Army skill,

NAVY = dummy variable to indicate if observation was for a Navy skill,

T = dummy variable to indicate if observation was for end FY81.

In this functional form, the coefficient (b_1) of PCP is precisely the elasticity parameter estimate. The constant term, b_0 , captures prevailing trends in reenlistment rates for the period examined separate from the influence of the bonus and other variables in the equation estimated. During the execution of the regression, observations were dropped if the skill had less than 25 members eligible to reenlist. This model was estimated for each zone of SRB eligibility. Furthermore, an iterated least squares regression technique was applied. This weights residuals in an attempt to obtain more robust parameter estimates, that is, it attempts to achieve more stable estimates than other methods obtain when the variables used are not normally distributed. Ordinary least squares (OLS) regression is a statistical parameter estimation technique that is not robust, i.e., its estimates are heavily influenced by extreme values (outliers) and may result in biased estimates. Table 8 shows the parameter estimates for Method 2.

Table 8
Zone A Reenlistment Parameter Estimates
Method 2

Variable	Coefficient	Asymtotic 95% Confidence Interval	Asymtotic Standard Error
1	b0 = .481	.371 - 0.590	.056
PCP	b1 = 2.39	1.73 - 3.06	.337
PCE	b2 = 0.993	0.965 - 1.02	.014
ARMY	b3 = -0.374	-0.493 - -0.255	.061
NAVY	b4 = -0.249	-0.378 - -0.119	.066
T	b5 = -0.051	-0.152 - 0.050	.051

Note: Appendix A contains detailed information on this regression.

There are still other desirable features about this second method. First, this is not a completely cross-sectional model like that of Method 1. Instead, it incorporates a direct comparison of reenlistment rates from year to year, giving it some longitudinal properties. In a cross-sectional model, changes in reenlistment rates are predicted from inter-skill changes in pay while a model with longitudinal properties predicts reenlistment rate changes from intra-skill pay changes. Second, it was possible to exclude observations that had no changes in multiples. There are some skills in the SRB program that have had almost no changes in SRB multiples. For these skills the effect of the SRB has been to create a semi-permanent "differential pay," providing people higher compensation for duty in distasteful or continuously marketable skills. The SRB is used to maintain adequate reenlistment rates, but is not intended to alter reenlistment rates on a year-to-year basis. For example, certain nuclear fields in the Navy have received level 6 multipliers for over 8 years, and have only recently reduced the multiple to 5.

Third, analysts and managers should observe that, in practice, SRB skills fall into two categories: 1) those for which payment is intended to be a flexible, short-term solution to temporary changes in labor markets or shifts in military manpower requirements, and 2) differential pays for specific skills or duties. In both cases, the intended effect of the bonus is the same - to achieve adequate reenlistments. However, in a longitudinal model the elasticity is difficult to measure for some skills in the second category. Finally, the constant term and the variable T essentially controlled for the upward trend of reenlistment rates during the interval tested. Since the observations included skills in the SRB program only, the implication is that reenlistment rates for SRB skills increased over the time period FY79 through FY81 independent of increases in bonus multiples. The observed rate of increase in reenlistment rates for SRB skills closely matches the rate of increase in Service-wide reenlistment rates that are evident in Table 5. However, this analysis is not sufficient to determine if reenlistment rates for SRB skills match reen-

listment rates for non-SRB skills - only that they have increased at the same rate. However, the data used showed a 46% reenlistment rate for SRB skills in Zone A at the end of FY81. In summary: a) SRB levels persist despite improvement in reenlistment rates and b) SRBs apparently increased reenlistment rates over and above increases occurring as a result of some other factors (pay raises, economic conditions, etc.) during the period under observation.

There are implications that can now be addressed concerning these parameter estimates. Estimates using robust estimation techniques produce elasticities lower than those produced by ordinary least squares techniques, indicating that a few outliers (skills with elasticities many deviations from the average elasticity) tend to inflate elasticity estimates. The corresponding OLS produced an elasticity estimate of 3.06 for first term, but if we take 2.39 as the elasticity from Table 8, the improvement factors closely approximate those used by OSD for first-term reenlistment rates between 30 and 35%, as shown below:

Zone A Improvement Factors

MULTIPLIER -	1	2	3	4	5	6
DoD (30-35%)	1.11	1.23	1.36	1.48	1.61	1.74
Method 2	1.12	1.24	1.36	1.48	1.60	1.72

In fact, reenlistment rates in recent years have been even higher than 35%. For bonus skills used in this analysis, the average reenlistment rate was 46%. Except under extremely unusual circumstances, elasticities will decrease as reenlistment rates increase. Services may well be entering such a period. Bonuses remain important to the undecided individual, but fewer are undecided about reenlistment. A smaller percentage of reenlistees will be marginally undecided, resulting in more payments to those already committed to reenlistment. So, the manpower return on the SRB budget investment is reduced.

Table 9 shows the result of estimating the model for Zone B. Except in the Army, Zone B bonuses are less effective than are Zone A bonuses. The estimated elasticity was only 1.07, resulting in the following improvement factors:

Zone B Improvement Factors

MULTIPLIER -	1	2	3	4	5	6
Method 2	1.06	1.11	1.17	1.22	1.28	1.33

Improvement factors actually peak at 1.24, since SRB caps prohibit higher payments at multiples 5 and 6. Several factors have been used to explain these low elasticities. High reenlistment rates may be an

explanation, as in Zone A. The average reenlistment rate for Zone B bonus skills was 69%, but Warner [4], [5] believes there is an additional explanation, because Zone A bonuses induce people with lower taste for military service to reenlist. The Zone B elasticity estimated here is in the range of that estimated by Enns, Nelson, & Warner [5] for E6 and E7 reenlistments.

Table 9
Zone B Reenlistment Parameter Estimate

Variable	Coefficient	Asymtotic 95% Confidence Interval	Asymtotic Standard Error
Intercept	$b_0 = .321$.162 - .480	.080
PCP	$b_1 = 1.07$.146 - 2.00	.469
PCE	$b_2 = 1.40$	1.22 - 1.56	.085
ARMY	$b_3 = 1.75$	1.60 - 1.90	.076
NAVY	$b_4 = -.22$	-.374 - -.077	.075
T	$b_5 = -.25$	-.180 - -.131	.079

Note: Appendix A contains detailed information on this regression.

No similar model for Zone C produced stable estimates of elasticity that were significantly (in a statistical sense) different from zero at the 95% level of confidence. The average reenlistment rate for the 35 skills reporting Zone C reenlistment bonuses was 88%. However, not all DoD skills receiving SRB in Zone C were reported on the files used. The newness of the Zone C program at the time the files were constructed may have precluded complete updates by all Services. Nevertheless, for the skills reported, bonus changes did not explain changes in reenlistment rates using the same control variables used in the analysis for Zones A and B.

Since empirical evidence failed to establish a relationship, an analytical approach may be illuminating. By simply extrapolating Zone B elasticities into Zone C one may adjust the Zone B estimate to account for the higher reenlistment rates in Zone C. Such an adjustment may reasonably be considered an upper bound of the Zone C elasticity. Changes in reenlistment rates from Zone A to Zone B do not by themselves account for all of the reduction in elasticity from Zone A to Zone B; therefore, it is not unreasonable to assume that the reduction from Zone B to Zone C will be greater than the algebraic reduction that results from a different reenlistment rate. Thus, this study will assume that the result is the best achievable. In going from a reenlistment rate of 69.9% to 88%, the estimated elasticity drops to about .84. (Change in pay also had a minimal effect.)

The next step of the analysis was to determine if there were differences in elasticity between the Services. Figures 1, 2, & 3 graphically

demonstrate the relationship between pay changes and retention changes for Army, Air Force, and Navy. Symbols on the graph represent skills that had changes in pay caused by bonus changes. These graphs are for skills represented in Zone A only.

The apparently low responsiveness of the Navy should be viewed very cautiously. The graph is a plot of only two variables: pay change as a percent of RMC and percent change in reenlistment rates. The plots do not take into account other explanatory factors, such as sea intensive ratings and/or submarine duty. Responsiveness is underestimated without accounting for these factors. On the other hand AF responsiveness as illustrated may be overestimated, since the AF graph does not account for a 20% improvement in reenlistment rates that prevailed from FY80 to FY81 over and above changes caused by SRB shifts. In all the graphs those skills far above or below the "best fit" line are skills with starting reenlistment rates far from the average reenlistment rates. In effect the variation in responsiveness at a particular multiplier would be magnified without controlling for this factor. Nevertheless, the group estimates are useful to demonstrate that service differences must be understood and considered by decisionmakers.

Figure 1

PAY ELASTICITY (ARMY) ZONE A

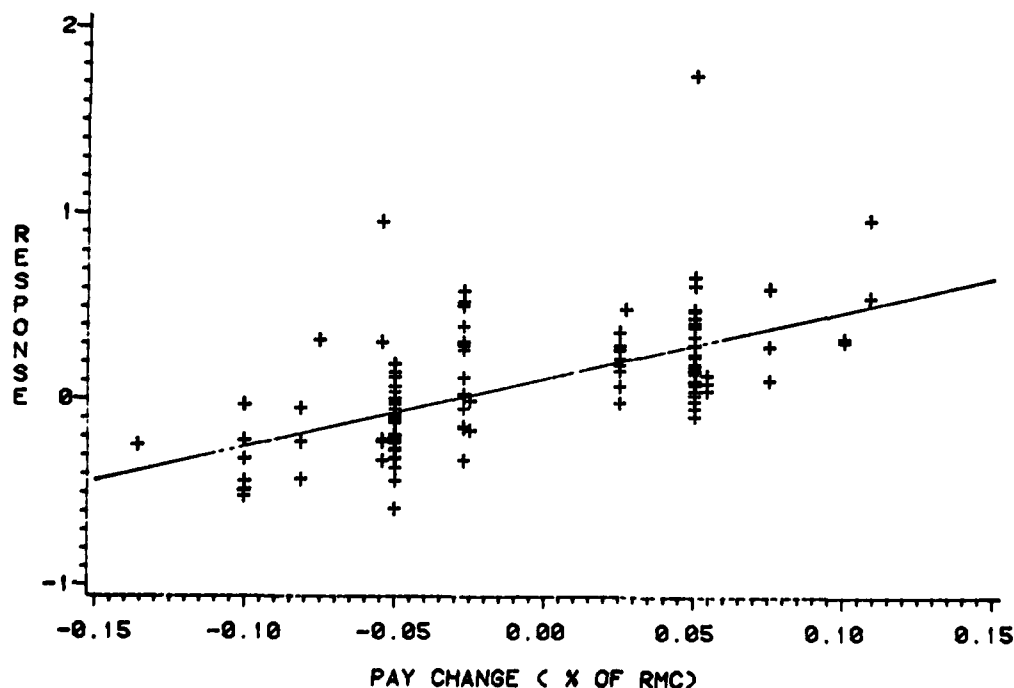


Figure 2
PAY ELASTICITY (AF)
 ZONE A

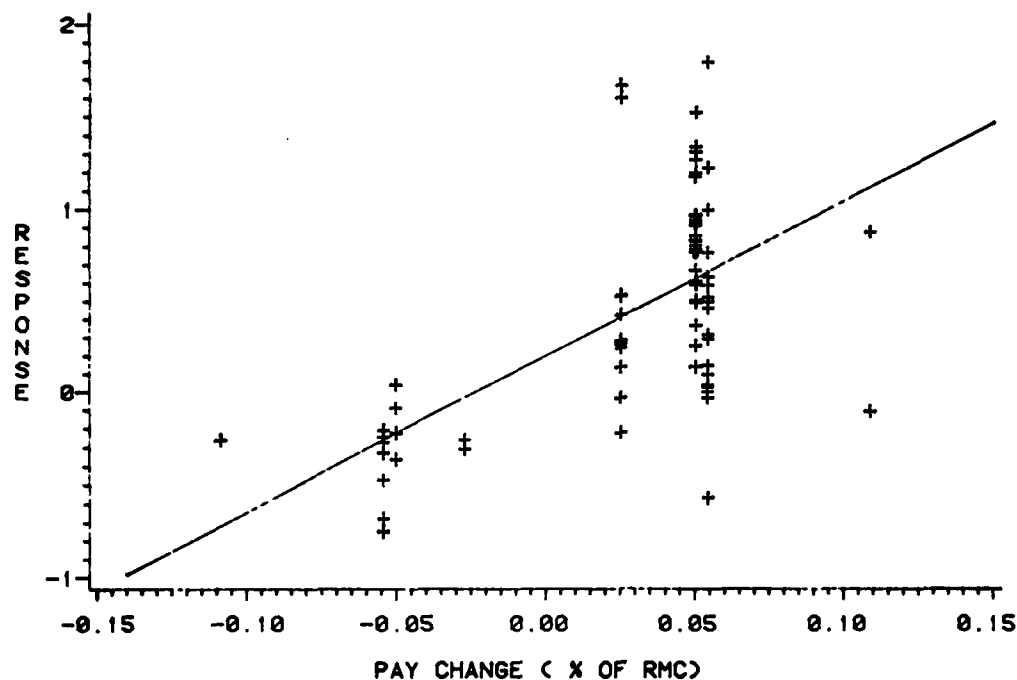
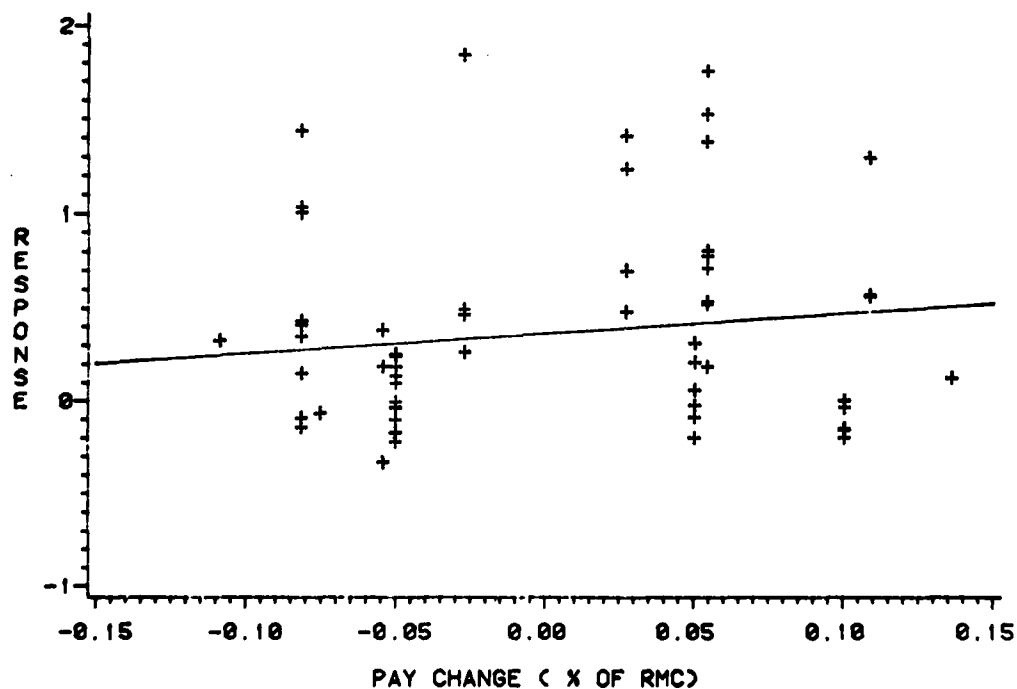


Figure 3
PAY ELASTICITY (NAVY)
 ZONE A



Summary.

From the preceding analyses several observations can be made. Zone A bonuses appear effective in inducing additional reenlistments, but the marginal cost of these additional reenlistments has yet to be examined. In today's environment of higher reenlistment rates and increased RMC, the marginal cost must be weighed against the benefit of improved manning. Only then can comparisons with previous studies be complete. Catch up pay raises, other special pays, and economic conditions during the time period may have improved reenlistments to a point where fewer additional reenlistees are attracted by the bonus than were attracted by bonuses during previous periods of depressed pay adjustments. Zone B bonuses appear less effective than those in Zone A. In Zone A, a 5% change in pay induced by the bonus may generate an estimated 12% change in reenlistments while only changing Zone B reenlistments by an estimated 5%. Moreover, we cannot reject the possibility that in Zone C changes in the bonus are currently not an effective means to induce changes in reenlistment. It seems clear from the data that Service differences do exist, but unique policies and other factors that differ between Services and which affect reenlistment decisions must be understood and quantified before bonus effectiveness across services can be understood completely.

Of the 618 SRB skills and subspecialties in DoD, 318 skills were offered Zone C reenlistment bonuses. (In FY83 this number has been reduced considerably by the efforts of all services employing Zone C bonus.) But, on the basis of the results of this analysis, it is clear that other factors dominate the reenlistment rates in Zone C to the point where bonuses cannot be determined to have a significant impact on retention in Zone C. These factors include the natural selection process whereby only those with homogeneous attitudes toward civilian and military service even enter Zone C. Furthermore, the benefits of the retirement system seem to dominate career decisions.

B. METHOD OF PAYMENT/RECOUPMENT.

The payment method for SRBs has changed frequently since implementation in 1974. The historical perspective portion of this paper has enumerated the significant departures from status quo. However, if these changes were the result of legislation affecting appropriations, with impact on retention a secondary consideration, the Services remain unanimously in support of a return to lump-sum payments versus any payment plan involving anniversary payments. They have several arguments supporting their position, though there are some costs associated with return to lump-sum. This section addresses the costs and benefits related to various payment methods.

The Services have long believed that lump-sum payments are more cost effective, since more reenlistment eligibles would be induced to continue service if all of the bonuses were paid up front rather than through

some form of installment plan. Lump sum allows OSD to take advantage of the time preference for money to obtain more reenlistments at a lower cost. Changes to the method of payment have provided an opportunity to study the differences in reenlistment behavior. These changes provide insight into the rate at which reenlistees prefer current income (lump sums) to deferred income. Discount rates may be used to quantify the reduction in effectiveness of installment payments relative to lump sum. Cylke, Goldberg, Hogan & Mairs [9] estimated the impact of the shift from annual installments prior to April 1979 to lump-sum payments after that date. By observing the change in reenlistment behavior, they estimated that Navy personnel behave as if their nominal discount rate was about 29 percent in an environment of about 11 percent inflation, so that a person's real discount rate is 18 percent.

In February 1982, the payment policy was again shifted to a compromise 50% lump sum with the remainder in annual installments. The inflation rate was only slightly lower at about 10 percent. No analysis has been done to determine the effect of this latest change.

Black [10] recently completed a study of discount rates based on a 1978-79 DoD survey of military personnel, both officer and enlisted, including all branches of military service. He estimated real discount rates by years of service. The estimates were based on a survey question about alternative retirement payouts. For a typical first-term reenlistee the estimated real discount rate was about 14.5 percent. So in an environment of 10% inflation, the expected behavior of an individual would reflect a total discount rate of 24.5%. (Recall that the behavior of an individual will change under different inflation scenarios.)

Table 10 below shows the lump-sum equivalent of various bonus amounts relative to the present payment method for 4- and 6-year obligations. From the data in Table 10, it is observed that typical reenlistment bonuses can be reduced by about 15% before any reduction in reenlistment rates would occur in today's economic environment (5% CPI), provided bonuses were paid in lump sum instead of by the present method.

Table 10
Present Value of Bonus Amount
under Current Payment Plan

Bonus Amount	Obligation	DISCOUNT RATE		
		.14	.19	.24
4,000	4 year	3,548	3,427	3,321
	6 year	3,373	3,223	3,098
8,000	4 year	7,095	6,853	6,641
	6 year	6,746	6,446	6,196
12,000	4 year	10,643	10,280	9,963
	6 year	10,120	10,120	9,294

Note: If real discount rates are 14%, then the first column would represent a no-inflation scenario and column 2 and 3 would be 5% and 10% inflation scenarios, respectively. Values were calculated for 4 years by the formula below and a similar formula for 6 years:

$$.5B + \frac{.5B}{t-1} \sum_{i=1}^{t-1} \frac{1}{(1+r)^i}$$

where: r = discount rate
t = years obligated.

There are two categories of recoupable bonuses that must be addressed when considering lump-sum payments. The first category is those who remain in the service but become ineligible for the bonus due to skill or qualification changes. The second category includes those who leave service before completing their bonus obligation. In the first category, the Air Force and Navy report no problems recouping unearned bonuses for in-service members. In their inputs to the data requests, other Services did not address in-service recoupment. With regard to Category 2, less than one-half of one percent of SRB recipients leave the military with recoupable bonuses. All Services combined report fewer than 500 people per year in this category with approximately 20% recoupment on or after separation. The number of cases was unrelated to the method of payment as it changed from time to time; however, the amount of money (per case) involved would naturally vary according to payment method.

OSD has recently standardized procedures for identifying separatees owing recoupable SRBs, so it will be easier to quantify this aspect of bonus management in future years. There have also been two recent policy changes within DoD that affect recoupment/termination under various payment plans. First, voluntary separation for pregnancy is now

considered a recoupable separation reason. Second, bonuses are now terminated but not recouped for direct commissioning programs, so members do not forfeit any portion of the bonus received, but neither do they receive future installments. Services must continually monitor recoupment, termination, and utilization issues related to bonus management, but a switch to lump sum would have minuscule impact on these concerns relative to the substantial gains to be made.

The annual SRB budget is significantly affected by the method of payment. There are two effects to be considered. First is the temporary budget change associated with a shift of the payment method. Second is the long-term budget change associated with the effectiveness of the payment method chosen relative to possible alternatives. The obligated cost best identifies the annual bonus activity, since it is independent of payment method. The total SRB obligated cost for FY82 is \$686,900,000 with Service distribution as shown in Figure 4. Table 11 shows the requested budget for FY83. Table 12 shows the distribution of the SRB budget on a per capita basis to indicate where SRB dollars are concentrated.

Figure 4

SRB OBLIGATED COST BY SERVICE

FY 82

PERCENT OF SERVICE

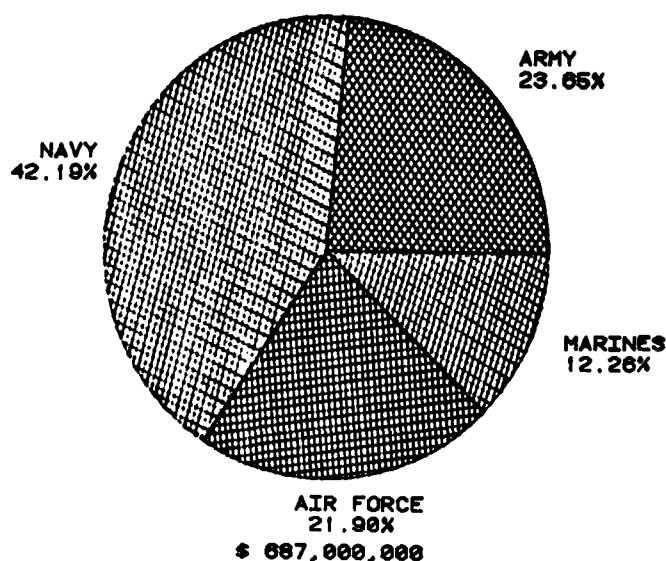


Table 11
FY83 DoD SRB Budget

<u>SERVICE</u>	<u>REQUESTED SRB</u>	<u>FUNDED</u>	<u>% CHANGE</u>
ARMY	121,341K	92,641K	-24%
NAVY	279,500K	218,300K	-21%
MARINE	69,219K	59,219K	-14%
AIR FORCE	118,962K	105,562K	-11%

Note: In the FY82 DoD Appropriation Bill, Congress required that each Service examine SRB multiple to see if it could be reduced due to the large FY82 pay raise.

Table 12
Total Reenlistment Compared to Bonus Reenlistment

	FY81			FY82		
	<u>Total</u>	<u>Bonus</u>	<u>%</u>	<u>Total</u>	<u>Bonus</u>	<u>%</u>
Army	78,250	21,910	28	84,069	23,175	28
Navy	41,175	20,644	50	41,862	26,577	56
USAF	64,933	19,480	30	71,463	27,017	30
USMC	16,217	10,055	62	15,051	10,958	73
DoD	196,264	72,089	37	212,445	87,727	41

Note: It is estimated that in FY 83, 97,077 reenlistees will receive bonuses, while 105,036 will receive them in FY84. Reenlistment data exclude non-bonus extensions.

With no change in method of payment, the Services are budgeting \$623,941,000 in FY84. Though Table 4 shows the DoD budget for SRB in each year, it does not show what portion of the budget is used to pay new recipients versus that portion used to pay anniversary payments to reenlistees of earlier years. Table 13 shows what the SRB cost would be if all bonuses were paid in lump sum in the year of reenlistment. Despite a budget cut of 15% from FY81 to FY82, there was a 22% increase in the number of bonuses paid and a 30% increase in obligated costs that are yet to be fully reflected in the budgets shown in Table 4. The reduction in the budget was very short lived--the gap was filled quickly by more SRB payments. Despite cuts in the requested budget for FY83 as shown in Table 11, more bonuses will be paid again in FY83.

Table 13
Selective Reenlistment Bonuses--Total Obligation of New Payments

Fiscal Year	Army		Navy		Marine Corps		Air Force		DoD	
	Number	Dollars (million)	Number	Dollars (million)	Number	Dollars (million)	Number	Dollars (million)	Number	Dollars (million)
1975	15,382	\$133.1	14,452	\$ 89.7	936	\$ 5.9	8,797	\$ 26.1	39,357	\$ 254.8
1976+T	10,898	57.3	9,651	73.6	716	4.5	3,528	3.4	24,793	138.8
1977	11,510	59.3	9,984	80.3	1,056	4.4	2,799	2.8	25,349	146.8
1978	16,380	65.8	10,499	87.2	2,169	8.7	3,205	3.5	32,253	165.2
1979	14,892	57.5	9,991	88.9	2,496	11.4	3,954	17.3	31,333	175.1
1980	15,367	63.5	14,309	115.8	2,996	21.6	5,088	30.3	37,760	231.2
1981	21,910	120.3	20,644	240.0	10,035	77.8	19,480	91.7	72,089	529.8
1982	23,175	162.9	26,577	289.4	10,958	84.2	27,017	150.4	87,727	686.9
1983 EST	18,066	115.7	33,138	367.2	11,794	106.7	34,079	181.4	97,077	771.0
1984 BUD	28,288	211.2	32,119	372.6	12,529	118.5	32,700	183.2	105,636	885.5

Note: The number shown is the number of new payments; the dollars shown are the value of the new payments and represents the total obligated cost for, the new payments. Actual fiscal year budgets vary due to several deferred payment plans postponing some traction of the obligated cost.

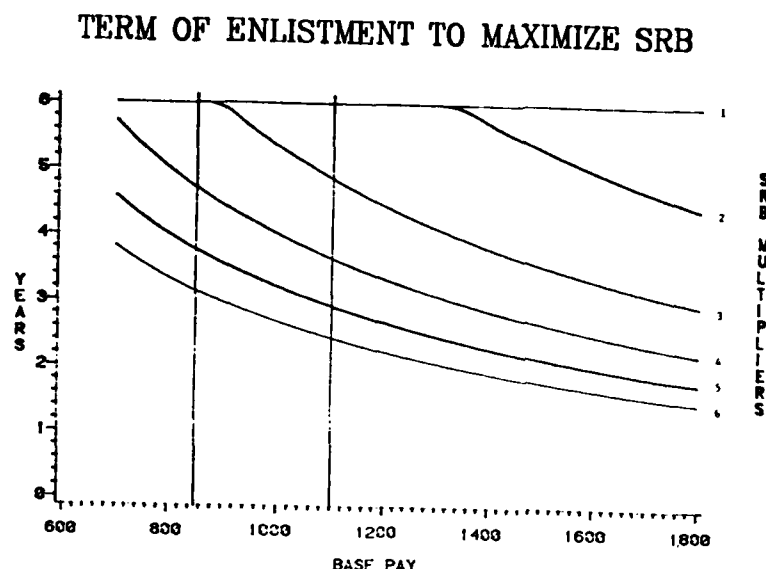
A return to lump sum in FY84 will be costly due to anniversary payments, but the obligated cost of \$885.5M can be reduced to about \$750 million and still allow payment of bonuses to 105,000 people, if the estimated discount rates for lump sum are reasonable. With recruiting and retention presently at favorable levels, a reduction in the number of payments can be anticipated and will further reduce the total budget. Finally, the true cost of the SRB program under lump sum is not hidden and passed on to future policy makers.

C. SRB CEILINGS/OBLIGATED SERVICE.

In September 1980, SRB ceilings were raised from 15 to 20 thousand dollars for Nuclear Enlisted personnel and from 12 to 16 thousand for all other SRB eligibles. In October 1974, an E-4 with 4 years of service reenlisting for 4 years would have been in a skill with an SRB multiplier of 6 to cap at \$12,000. If the cap had not been raised by October 1980, then a multiplier of 4 was sufficient for an E-4 with 4 years' military service reenlisting for 4 years to cap at \$12,000. The range of multipliers capable of inducing more and longer reenlistments was reduced a third. Multipliers of 5 and 6 became incapable of inducing more or longer reenlistments. With the cap raised to \$16,000, however, multiples of 5 and 6 were again rendered effective. A 6 multiplier would have to be awarded to maximize bonuses for E-4's with 4 years of service reenlisting for 4 years. With the new cap of \$16,000 and annual adjustment to basic pay by October 1982, 6 was again an ineffective multiplier. An E-4 over four in October 1982 would "max out" at a multiplier of 5 without reenlisting for a full 4 years, diminishing severely the effectiveness of a multiplier of 5 or higher. Figure 5 shows length of enlistment required for non-nuclear personnel to reach the \$16,000 ceiling. Title 37 U.S.C. prohibits reenlistments longer than 6 years in bonus computation.

Even nuclear-trained personnel with a higher cap of \$20,000 have no additional incentive to reenlist for longer than 4 because of the SRB ceiling.

Figure 5



This analysis is valid for Zone A reenlistments. The first vertical line in Figure 5 represents the basic pay of a typical Zone A reenlistee. The second vertical line represents an E-6 with over 8 years of service. If this is a typical Zone B reenlistee, then, as shown, only multipliers 1, 2, and 3 are effective as incentives since multipliers 4, 5, and 6 result in maximum bonuses for reenlistments of less than 4 years. A ceiling of \$20,000 for all would restore the bonuses to the same incentive value that existed in 1974 and again in 1980. Title 37 U.S.C. not only places a ceiling on total bonus amounts, but SRB multipliers are capped at 6 and reenlistments are capped at 6 years. Though there are 3 caps limiting total bonus amounts, there remains sufficient flexibility to target and apply incentive. However, when a cap is placed on the total bonus amounts, and the Services have selected the necessary multiplier, there remains only one variable, the length of chosen reenlistment. The wise reenlistee will choose the shortest term consistent with a maximum bonus. There is strong evidence that reenlistees behave accordingly [19]. A cap on total bonus amounts is at odds with the purpose of reenlistment bonuses. Services need the flexibility of the full range of multiples to maintain the viability of the SRB program. The link to basic pay is an essential element of the bonus computation. Congress authorized this linkage so that there will be equal incentive for reenlistment eligibles of all ranks and tenure. Though annual pay adjustments have the effect of increasing bonuses, they also insure equal incentive for members of the same rank and tenure reenlisting at different times. If bonuses become larger than necessary to adequately attract necessary reenlistments, then bonus multiples can be dropped.

There is no current justification for altering the bonus computation formula; but under the existing system some skills are designated a critically factor of 5 or 6 and are hobbled by a bonus ceiling while other skills (Navy nuclear-trained personnel) with the same criticality factor are by implication "more critical," as they are allowed larger bonuses. It makes little sense to have one ceiling for some skills and another ceiling for others. The criticality factor alone should embody the extent of the need for reenlistments in a skill.

Another aspect of the bonus program that detracts from the meaningfulness of SRB multiples is the idea of forgiving obligated service. If the obligated service is forgiven for some reenlistees but not all, there is an implied higher criticality for the reenlistee forgiven obligated service, even when both are in skills with the same multiplier. Table 14 below shows the SRB multiplier that would be required for a person who is not forgiven obligated service to get the same bonus amount as a person who is allowed to include previously obligated service in bonus computations.

Table 14
Bonus Equivalent Multiples
when no Obligated Service is Allowed

Additional Obligated Service	Multiple When 2 Years Obligation Forgiven					
	1	2	3	4	5	6
4	1.5	3	4.5	6	7.5	9
2	2	4	6	8	10	12

Note: The Navy is presently paying multiple 5 SRBs to people incurring only two years' additional obligated service as if the person were incurring 4 years of new obligation. To get an equivalent bonus, a multiple 10 would be required for this obligation in other skills.

The effect of using already obligated time in bonus computations is to award higher SRB multipliers for shorter reenlistments, as shown in the table. This practice is authorized in law and used by the Navy for first reenlistments of nuclear-trained enlisted personnel. These personnel receive enlistment bonuses and training for an initial 6-year obligation. They are allowed to reenlist after only 2 years of service. At this time they reenlist for 6 years, giving them just 2 years of additional obligated service, yet they receive an SRB computed as though there were 4 years of additional obligated service. Two years of their first enlistment are forgiven. With this group receiving a multiple 5 SRB, others would have to have a multiple 10 to receive the same bonus. Therefore,

not all multiple 5 SRBs have equal incentive value for people of the same grade and tenure. SRBs in excess of multiple 6 are not authorized. In addition, these bonuses are paid 4 years before the period of new obligated service begins. The investment opportunity further increases the value of the bonus relative to typical reenlistment bonuses.

Other Services have wanted to forgive obligated service when certain members are required to reenlist or extend early to obtain sufficient retainability for reassignment or training. These requests have not had strong support by OSD and have never been seriously considered by Congress. If there are insufficient numbers available to train or reassign, then higher multiples should be employed. To do otherwise is to pay a premium to someone willing to be trained or reassigned.

A recent study by Goldberg and Warner [19] concluded that the improvement in number of reenlistments resulting from a 1 level increase in multiplier was almost exactly offset by shorter enlistments when ceilings were placed on bonus amounts. Despite a 20% improvement in the reenlistment rate, there was no improvement in the man years obligated. In another study Hogan [12] concluded that although forgiving obligated service may attract more reenlistments because they are obtained earlier, manning would decline unless the new term included at least 3 years of previously unobligated time. Assuming his conclusions are reasonably correct, the Navy program is counterproductive in the long run.

D. SRB SKILL SELECTION.

When deciding to apply a bonus, managers must determine whether the marginal increase in reenlistments is worth the cost of paying bonuses to those who would have reenlisted in the absence of a bonus as well as to those who would have left without the bonus. The marginal cost of an additional reenlistee must be weighed against training cost and the value placed on the loss of experience. Recently, the aggregate reenlistment rates have been about 50%, as shown in Table 5 earlier in this report. The computation of marginal costs is developed below:

$$\text{marginal cost} = \frac{dp(r + dr)}{dr}$$

where: r = # who would reenlist without a bonus
 dr = # of additional reenlistees obtained with the bonus
 dp = change in pay (bonus);

$$\text{but elasticity } E = \frac{dr/r}{dp/p} = \frac{\% \text{ change in reenlistments}}{\% \text{ change in pay}}$$

so $dr = E * r * (dp/p)$, and

$$\text{marginal cost} = \frac{dp * (r + [E * r * (dp/p)])}{E * r * (dp/p)}$$

$$= \frac{dp * r * (1 + E * (dp/p))}{E * r * (dp/p)}$$

$$= \frac{dp * (1 + E * (dp/p))}{E * (dp/p)}$$

With elasticities estimated for Zone A as well as Zone B, it becomes possible to compute marginal cost in each zone. For first-term reenlistees with a multiple 3 SRB and a basic pay of \$850 (and total RMC of \$1,325) reenlisting for 4 years:

$$dp = \text{bonus} = \text{basic pay} * \text{SRB multiple} * \text{years}$$

$$= \$850 * 3 * 4$$

$$= \$10,200,$$

$$dp/p = (10200/48 \text{ month})/\$1325. = .16, \text{ and}$$

$$\text{marginal cost} = \frac{10,200(1 + .16E)}{.16E}$$

E was previously estimated at 2.39 (Method 2) for first term. So:

$$\begin{aligned} \text{Zone A} \\ \text{marginal cost} &= \frac{10,200(1 + .16 * 2.39)}{.16 * 2.39} \end{aligned}$$

$$= \$36,810.$$

In Zone B, E was estimated to be 1.07 and a bonus would be \$12,048 at \$1,004 monthly basic pay (\$1,560 RMC monthly), multiple 3, and reenlisting for 4 years. The marginal cost becomes:

$$\begin{aligned} \text{Zone B} \\ \text{marginal cost} &= \frac{12,048(1 + .16 * 1.07)}{.16 * 1.07} \end{aligned}$$

$$= \$82,029.$$

In Zone C there was no empirical evidence that the elasticity was significantly different from zero, so the marginal cost is extremely high. However, if we use the analytically derived upper bound on the Zone C elasticity of .84 we may determine a lower bound on the marginal cost. Doing so yields a marginal cost no lower than \$121,755. The actual marginal cost is likely to be far higher because the true elasticity must be considerably lower than .84 for reasons discussed in the analytical development of that figure. If the actual elasticity is less than .5, the marginal cost goes higher than \$195,000 per additional reenlistee in Zone C.

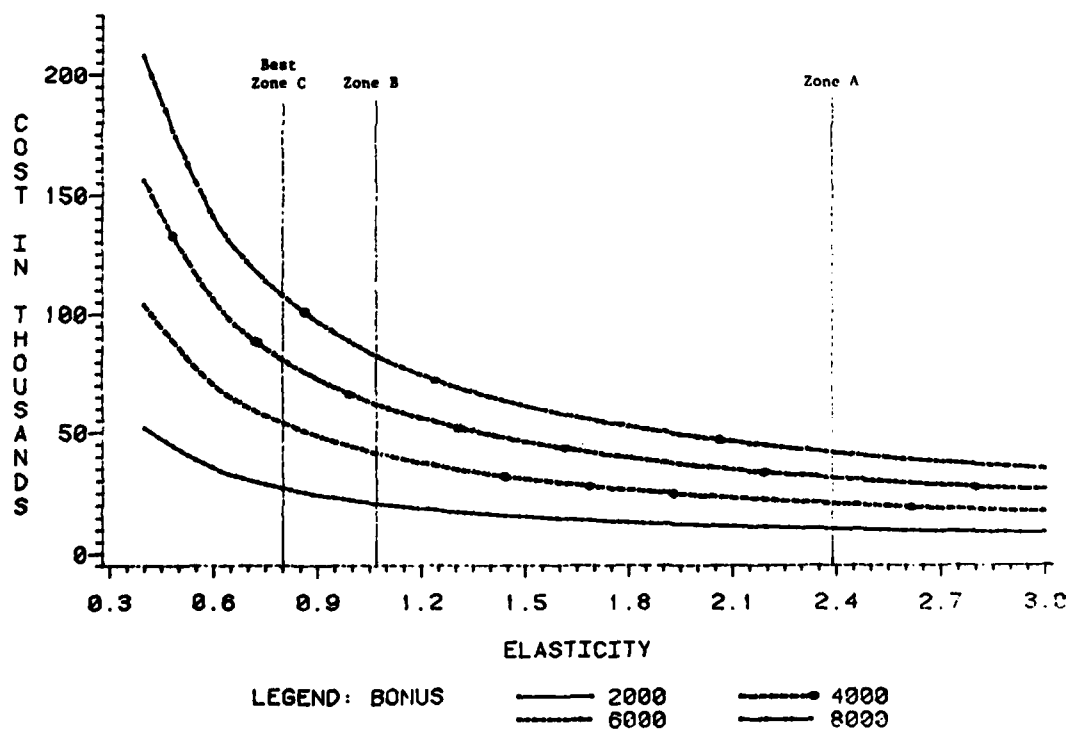
These values can be considered the implied replacement cost including training, procurement (inflated for expected attrition), and the value placed on experience or the loss of it. Additionally, the cost of achieving the desired force structure is included. Each Service and skill has a different value associated with these cost elements. Bonus managers must individually determine selection/elimination of skills and appropriate award levels based on these values and the risks associated with not paying the bonuses.

Figure 6 shows the relationship between marginal cost and elasticity at various bonus levels. By knowing the replacement cost and the elasticity of a given force, bonus managers can determine the maximum bonus that should be authorized for that force when additional retention is necessary. The lower elasticities estimated in this study imply that skills with low replacement costs should lower or drop bonus amounts. By observing the rapid growth in marginal costs as elasticities drop, it is clear that bonus managers must be extremely selective in choosing SRB skills.

Figure 6

MARGINAL COST OF ADDITIONAL REENLISTMENT

PERCENT CHANGE IN PAY = .10



Since the Services are currently in a period of high reenlisting rates causing marginal costs to escalate, it is important to include only those skills with a high cost associated with the separation of a reenlistment eligible. Table 15 below shows the size of the SRB program in FY82. As seen earlier in Table 11, 41% of all reenlistments in FY82 were SRB related, while this table shows that these reenlistees came from 52% of the OSD skills. The level of bonus activity indicated by these figures cannot be judged to be too high (or too low) without a close examination of other costs. The right amount of bonus activity is dependent on the level of basic pay relative to the number of skills unable to obtain adequate retention with basic pay. No specific analysis of this relationship has been accomplished in this study, but the marginal costs just developed are one indication that the Services should be particularly selective at this time in designating skills for reenlistment bonuses.

Table 15
SRB Skills as a Percentage of All Skills

	<u>Total Skills</u>	<u>SRB Skills</u>	<u>%</u>
Army	322	89	28
Navy	99	68	69
USMC	402	279	69
USAF	254	128	50
DOD	1077	564	52%

Note: Data shown do not include a small number of subspeciality skills that may be eligible for bonuses based on unique qualifications.

E. GENERAL OBSERVATIONS.

The Government Accounting Office (GAO) and the Defense Audit Service (DAS) have identified instances where individuals have received bonuses but were not performing duty in the bonus skill [14, 15]. To the extent that these people are not used in their bonus skills, Services fail to make the best use of SRB budgets. Services do not deny that some misuse of personnel takes place but in general feel that most "out-of-skill" assignments are justifiable, based on unique Service personnel reassignment policies. No specific analysis of this aspect of bonus management was completed for this report. The reader is referred to the studies mentioned above for specific data regarding skill utilization. After adjusting for "out-of-skill" assignments considered legitimate by the Services, malassignment rates run about 2-3%. OSD recently modified its directives to address the problem of out-of-skill bonus recipients. Services are now required to establish criteria describing valid out-of-skill assignments. Waivers are not to be made routinely, and annual reports to OSD are now required. These steps must be closely followed to be effective.

Navy enlisted submarine (nuclear trained as well as non-nuclear) personnel draw continuous submarine pay while assigned to shore duty, provided they have sufficient retainability (14 months beyond shore assignment completion date) to return to submarine duty. If an individual extends his current enlistment for this purpose, then he may subsequently reenlist and use time obligated by the extension as part of the new term of enlistment for purposes of computing the reenlistment bonus. Unlike the STAR (Selected Training and Reenlistment) program for nuclear-trained personnel, this kind of forgiveness of obligated service may occur in any SRB zone. To reverse the current policy on forgiveness of obligated service would be to correct a multiple pay condition in which Submarine Pay is given in return for obligated service sufficient to induce a return to submarine duty, but also SRBs are paid for the same time period to designated specialities. On the other hand, this kind of policy reversal would result in a net loss to the reenlistee. It may be necessary to adjust SRB multiples or submarine pay to offset the net loss if present levels of compensation are necessary to meet manpower needs.

Certain recipients of Proficiency Pay are paid for reasons better addressed through the use of SRBs. The QRMC has recommended that Proficiency Pay in its present form should be discontinued (see QRMC analysis of Proficiency Pay for details). From time to time there have been certain skills receiving maximum SRBs and Proficiency Pay (Shortage Speciality Pay). To provide adequate reenlistment incentive in the absence of Proficiency Pay, it may be necessary to authorize higher reenlistment bonuses than currently permitted. A "7th multiple" would provide equivalent compensation under such circumstances. For an E-4 over 4, a multiple 7 SRB would pay \$23,800 in lump sum. The current value of \$150/month for 4 years plus a multiple 6 SRB under the present payment plan at a 14% real discount rate and a 5% inflation rate, is \$22,431. One additional multiple is more than sufficient compensation for these individuals. For senior NCOs and Petty Officers, removal of the dollar ceiling and lump-sum payments is sufficient added value to more than compensate for elimination of shortage specialty pay without a 7th multiple.

All Services offer a variety of non-monetary reenlistment benefits to the greatest extent consistent with personnel objectives and policies. They also offer some form of retraining program to allow members of certain groups to change specialties when manning considerations allow. Other programs include guarantees for advanced training within the reenlistee's present speciality. A popular program in the Army is a stabilization option on reenlistment that guarantees the reenlistee will not be relocated for up to 12 months. Assignment guarantees by location or type of duty offer the reenlistee a change of environment if such options are available. These programs are generally consistent with Service needs but are targeted to potential reenlistees to induce higher retention. SRB should only be used when it is not practical to use or expand these programs for specific skills. The analysis presented in this paper relies heavily on the economically quantifiable aspects of bonus management. The correlation between pay and retention is not 100%. The balance represents unobserved or unexplained reasons for choosing to reenlist or not.

Every reasonable effort should be made to identify and exploit these and other noneconomic factors.

Each Service has a different "eligibility window," ranging from 30 days to 1 year. A reenlistee may not reenlist until he is within the eligibility window, e.g., if the window is 3 months then he may only reenlist when he is within 3 months of completing his existing term of service. At this writing the Army has a 6-month window in Zone A and a 3-month window in Zone B when a reenlistment bonus is involved. The Navy has a 90-day window but will be returning to a 30-day window next fiscal year (FY84). Currently the Air Force has the largest window. An otherwise eligible individual may reenlist up to 1 year prior to completion of his present term. No analysis has been done to determine if the size of the reenlistment window affects reenlistment rates. Certainly adjusting the window will have temporary budget impacts. Additionally, it can restrict or enhance the freedom of choosing when to reenlist. Personnel interviews confirmed the idea that a short reenlistment window may drive some to a civilian job search they might not have begun otherwise.

V. FINDINGS.

1. Selective Reenlistment Bonuses should be paid in lump sum.
2. The dollar ceiling should be removed from the bonus amount.
3. The practice of allowing forgiveness of obligated service is not efficient and should be discontinued when all other enhancements, including the "7th multiple" proposed in finding 6, are implemented. The authority for this provision should be retained while the effect of other enhancements is evaluated, but should not be extended beyond 30 September 1987 unless it is clearly necessary to resume the practice in order to improve retention and if other measures are not practical.
4. Zone A and Zone B bonuses continue to be effective management tools to induce additional reenlistments, although their marginal cost is currently high due to higher reenlistment rates and RMC. If the reenlistment behavior of the past several years continues, then Services should recognize that Zone C SRBs are marginally effective at best, and may be ineffective relative to other factors that influence reenlistment decisions beyond 10 years in the military. Bonuses should not be used in Zone C when conditions are like those in existence during the period examined in this study.
5. Skills with high reenlistment rates are the most costly additions to the SRB program. Manning shortages alone should not determine SRB policy under such circumstances. Services should be particularly selective at this time in designating skills for reenlistment bonuses.
6. Provided that Proficiency Pay or the practice of forgiving previously obligated service is discontinued, a "7th multiple" should be authorized in Zones A and B. This would provide adequate reenlistment

incentive in skills that would otherwise pay maximum SRB's and Proficiency Pay.

7. The Uniformed Services should strongly consider an effort to develop a uniform framework to aid decisionmakers in all Services in assessing bonus effectiveness. As a minimum the framework should focus on behavior differences by zone and Service. It should account for replacement cost by skill and length of service. Finally, it should use a consistent measure of bonus effectiveness throughout, such as bonus elasticity.

VI. RECOMMENDATIONS.

A. Continue SRB authority through 30 September 1987.

B. Amend Title 37 U.S.C. to:

1. Allow bonuses of up to 7 months of basic pay multiplied by the number of years, or monthly fraction thereof, of additional obligated service. (Allow criticality factor to range up to 7.)

2. Eliminate provision restricting maximum bonus amounts to \$20,000.

3. Discontinue the practice which allows previously obligated service to be used in bonus computations when other recommendations are adopted.

4. Provide for lump-sum payments only.

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METHOD 2 REGRESSION DETAIL

The regression procedure used is an Iteratively Reweighted Least Squares Technique. Specifically, it is described in SAS Users Guide: Statistics 1982 Edition pp. 30-36. The weight function used was:

$$\text{Weight} = (1 - (R/2)^2)^2$$

if $R < 2$, and

$$\text{Weight} = 0 \text{ otherwise}$$

where

R = absolute residual error.

In Zone A there were 256 skills with non-zero weights. In Zone B there were 143. Zone C had 36 skills represented.

SUMMARY OF RESPONSES

Selective Reenlistment Bonus

Issues:

1. These bonuses should be paid in lump-sum instead of the current installment payment method to maximize the effectiveness of the incentive.
2. The dollar ceiling should be removed from bonus amounts to prevent disincentives for longer reenlistments.
3. The practice of allowing forgiveness of obligated service is not efficient and should be discontinued when all other enhancements, including the "7th multiple" proposed in finding 6, are implemented. The authority for this provision should be retained while the effect of other enhancements are evaluated, but should not be extended beyond 30 September 1987 unless it is clearly necessary to resume the practice in order to improve retention and other measures are not practical.
4. Zone A and Zone B bonuses continue to be effective management tools to induce additional reenlistments, although their marginal cost is currently high due to higher reenlistment rates and RMC. If the reenlistment behavior of the past several years continues, the Services should recognize that Zone C SRBs are marginally effective at best, and may be ineffective relative to other factors that influence reenlistment decisions beyond 10 years in the military. Bonuses should not be used in Zone C when conditions are like those in existence during the period examined in this study.
5. Skills with high reenlistment rates are the most costly additions to the SRB program. Manning shortages alone should not determine SRB policy under such circumstances. Services should be particularly selective at this time in designating skills for reenlistment bonuses.
6. Provided that Proficiency Pay or the practice of forgiving previously obligated service is discontinued, a "7th multiple" should be authorized in Zone A and B. This would provide adequate reenlistment incentive in skills that would otherwise pay maximum SRB and Proficiency Pay.
7. The Uniformed Services should strongly consider an effort to develop a uniform framework to aid decision-makers for all Services in assessing bonus effectiveness. As a minimum the framework should focus on behavior differences by zone and Service. It should account for replacement cost by skill and length of service. Finally, it should use a consistent measure of bonus effectiveness throughout, such as bonus elasticity.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Does not concur with Issue 3. It views the authority to forgive previously obligated service as a necessary provision of the law to preclude inequitable treatment of enlisted members extending for the purpose of obtaining retainability for relocation or training.
Coast Guard	Concurs.
NOAA	N/A
PHS	N/A
JCS	Concurs.

LEGISLATIVE IMPLICATIONS

Selective Reenlistment Bonus

1. Amend 37 U.S.C. 308(a)(1) to allow bonuses of up to 7 months of basic pay multiplied by the number of years, or monthly fraction thereof, of additional obligated service.
2. Amend 37 U.S.C. 308(a)(1) to eliminate provisions restricting maximum bonus amounts to \$20,000.
3. Amend 37 U.S.C. by eliminating section 308(e), which allows previously obligated service to be used in bonus computations.
4. Amend 37 U.S.C. 308(b) to authorize lump-sum bonus payments only.

37 U.S.C. 301c
INCENTIVE PAY: SUBMARINE DUTY

SUBMARINE DUTY INCENTIVE PAY

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SUBMARINE DUTY INCENTIVE PAY

I. PURPOSE. This incentive pay is designed to encourage members of the Navy, both officer and enlisted, to pursue a career in the submarine service. It is also awarded as an incentive for advanced training and duty in the Navy's fleet ballistic missile and attack submarine force.

II. DATA SOURCES. The majority of data, primarily manning and retention information along with Navy directives and back-up material were provided by the Navy. Finance and personnel data were provided on magnetic tape and used extensively in this analysis. The British Embassy provided a comprehensive report of the level and structure of the British pay system including special pays for submarine service. Extensive interviews with submarine crews were conducted at Charleston, Norfolk, Kings Bay, and San Diego Naval installations.

III. BACKGROUND.

A. JANUARY 1901 - DECEMBER 1980. Before 1928 enlisted men were paid five dollars per month and one dollar (up to \$15/month) for each day they submerged in a submarine, in addition to regular pay. By Executive Order these payments began in January 1901 shortly after the commissioning of the first submarine in October 1900. The extra one dollar per day did not begin until November 1905, also by Executive Order. Collectively, these pays were compensation for hazard, experience, and clothing maintenance. The Joint Services Pay Act of 1922 (P.L. 67-235) added legislative backing to these Executive Orders but did nothing to alter the amounts or form of the pay. Officers did not receive special pays for submarine service before 1928. On 9 April 1928 Public Law 70-244 authorized Submarine Duty Pay at 25% of base and longevity pay for officers, and not less than \$5 nor more than \$30 each month for enlisted personnel.

Since the Act of 4 August 1942 (P. L. 77-698), the rationale, form, and value of special pays for submarine and aviation service have been closely linked. In fact, the hazards associated with duty in aviation and submarine service were considered equivalent by the 77th Congress. The 1942 law set Submarine Duty Pay at 50% of base and longevity pay for officer and enlisted personnel to match the hazardous duty pay for flight duty. As basic pay changed due to promotion, advancement in tenure, or periodic pay adjustment, Submarine Pay changed accordingly. The rationale that these pays were recompense for shorter career expectancy, caused by the hazardous nature of the duties, prevailed for seven more years.

In 1948, the Advisory Commission on Service Pay (Hook Commission) recommended that the main purpose of these pays should be to fill a supply-demand function rather than strict recompense for hazardous duty. World War II was over and the draft was abandoned. The post-war demobilization and absence of a draft meant that the Navy had to attract and retain

sufficient volunteers to submarine service to meet peacetime requirements. The higher rates associated with higher grade were felt to be logically consistent with an incentive role of the pay. It was believed that the risk or hazard did not increase with advancement in grade, but that voluntary submarine (or aviation) service may require greater incentive for senior personnel because higher paid personnel had "more to lose" through death or disability.

The Career Compensation Act of 1949 (P.L. 81-351) implemented the recommendations of the Hook Commission. Separate rates were established by pay grade, ranging from \$30/month for an E-1 to \$70/month for an E-7 and \$100/month for an O-1 to \$210/month for an O-6. Rates for O-7 and O-8 were set at \$150/month. A straight percentage of the basic pay system was rejected because for certain grades it would provide:

...salary levels far beyond the inducement required and beyond the needs of the Services in terms of encouraging officers and men to accept hazardous duty. Moreover, the differential would be exaggerated if basic pay scales were increased [6].

In 1953 the Commission on Incentive-Hazardous Duty and Special Pay (the Strauss Commission) modified the reasoning of the Hook Commission. The military had just received a 4% adjustment to basic pay in May 1952 (the first pay adjustment since October 1949), and it is clear the Commission was concerned that the incentive value of the special pay had depreciated. They recommended that special pay be computed as a percentage of basic pay, like the method prevailing before implementation of the Hook Commission recommendation, to prevent such depreciation. They discarded the "fixed flat rate" formula recommended by the Hook Commission but retained the incentive aspect of the pay. There was, however, no legislation that resulted from the Strauss Commission.

The Career Incentive Act of 1955 (P.L. 84-20) appeared to be a compromise between the recommendations of the two commissions. The direct linkage as a percentage of basic pay was not implemented, but longevity steps were added to the "fixed flat rate" scheme. The basis and rate of Hazardous Duty Incentive Pay for submarine duty remained unchanged until 1 January 1981 upon implementation of the Military Pay and Allowances Benefits Act of 1980 (P.L. 96-579). By this time the value of this Hazardous Duty Incentive Pay had depreciated considerably relative to basic pay. Some of the adverse effects on retention normally associated with such a decline may have been averted by the introduction of various reenlistment incentives. The introduction of retention bonuses for officers qualified to supervise, operate or maintain the power plant of a nuclear-powered submarine may have served a similar function. (The reader should refer to the 5th QRCM reports on Selective Reenlistment Bonuses and Nuclear Officer Incentive Pays or the Military Compensation Background Papers[1] for further discussion of these pays.)

B. JANUARY 1981 - PRESENT. On 1 January 1981 the Military Pay and Allowances Benefits Act of 1980 (P.L. 96-579) implemented an entirely different approach to special pay for submarine service. For the first time in the history of this special pay, it was not considered compensation or incentive for performance of hazardous duties. Instead, it was considered a career incentive without regard to potential or actual hazards of the duty similar to Hazardous Duty Incentive Pay for Aviation, which had been transformed in 1974 into a career incentive pay without regard to potential of actual hazards of flight. Submarine Duty Incentive Pay, as it came to be called, was patterned nearly identically to ACIP. The Military Pay and Allowances Benefits Act also authorized increases in Career Sea Pay and Nuclear Incentive Pays. Duty on "operational submersibles" (such as undersea exploration or research vehicles and deep sea rescue vehicles) is currently considered submarine duty and is included in the present authority for Submarine Duty Incentive Pay. It is undistinguishable for pay purposes.

There are two forms of Submarine Duty Incentive Pay: Continuous Submarine Duty Incentive Pay (CONSUB) and Operational Submarine Duty Incentive Pay (OPSUB). CONSUB begins when training starts leading to a submarine designator, rating, or Navy Enlisted Classification (NEC) and continues each month through 26 years of service. Members must perform operational submarine duties for at least 6 of the first 12 years (1st gate) and at least 10 of the first 18 years (2nd gate) of service to remain eligible for CONSUB through 26 years of service. CONSUB stops at 12 years if the condition for that gate is not satisfied. If the condition for the second gate is not satisfied, CONSUB then stops at 18 years of service unless the member has at least 8 but not the required 10 years of operational submarine duty, in which case CONSUB is not stopped until 22 years of service. If CONSUB stopped at the first gate but the member meets operational requirements to be otherwise eligible for CONSUB at the second gate, then CONSUB is resumed.

OPSUB is authorized to members not eligible for CONSUB but who perform operational submarine duty. Members of operational command staffs are eligible for OPSUB on a monthly basis provided certain minimum underway hours are served. In general, the rules require 48 hours of underway operations to receive OPSUB in a given month. If the 48 hours requirement is not met, then unused time in the preceding 5 months may be used to meet current month eligibility. Failure to accrue the required underway hours does not mean that OPSUB stops immediately. Members are given up to a 3-month grace period, after which they are required to reimburse the Navy unless they have accumulated sufficient underway hours. Gate time is also accrued for these personnel on a month-to-month basis, with certain grace periods allowed. Additionally, OPSUB is authorized and accrues on a prorated day-for-day basis for non-submarine designated personnel who are assigned for duty, including temporary duty, on board submarines.

The total number of personnel who received Submarine Duty Incentive Pay and the associated cost are shown in Table 1.

Table 1
Submarine Duty Incentive Pay

<u>Fiscal Year</u>	<u>Total Personnel</u>	<u>Cost (\$000)</u>	<u>Officers</u>	<u>Cost (\$000)</u>	<u>Enlisted</u>	<u>Cost (\$000)</u>
1972	22,388	\$24,743	2,660	\$5,788	19,728	\$18,955
1973	22,660	25,584	2,948	6,424	19,712	19,160
1974	21,974	24,996	2,816	6,178	19,158	18,818
1975	21,802	24,637	2,679	5,822	19,153	18,815
1976	21,903	24,617	2,668	5,787	19,235	18,830
1977	21,896	24,030	2,650	5,708	19,246	18,322
1978	22,703	24,458	2,798	5,931	19,905	18,527
1979	23,190	24,429	2,750	5,763	20,440	18,666
1980	23,280	24,404	2,814	5,902	20,466	18,502
1981	31,344	51,753	4,130	13,189	27,214	38,564
1982	36,552	66,790	4,937	16,841	31,615	49,949
1983(Est.)	36,880	67,736	5,031	17,262	31,849	50,474
1984(Est.)	37,825	70,546	5,186	18,299	32,639	52,247

CONSUB was first authorized effective 1 January 1981. Information displayed prior to that date is for the Hazardous Duty Incentive Pay that was the predecessor of Submarine Duty Incentive Pay.

IV. METHODOLOGY. Submarine Duty Incentive Pay is nominally intended to provide sufficient incentive to induce people to pursue duty in the submarine service. Therefore, it is important in this analysis to address the nature of duties required. There is no clearly identifiable source of employment in the civilian sector for individuals in submarine service. Certainly certain skills on board a submarine are transferable to the civilian marketplace (nuclear-trained officers/enlisted, for example), but other pays, such as reenlistment bonuses and bonuses for nuclear-qualified officers, are authorized to provide compensation which will cause individuals with certain skills to be indifferent (to the extent that certain retention patterns are desirable) to employing those skills in or out of the military. Many skills required on a submarine are not transferable and easily marketable by employees outside the military, yet the nature of the duty on board submarines may be adverse or arduous for all crewmembers. To retain these service members at rates comparable to typical service members that are not in submarine service, may require some form of compensation for the nature of submarine duty, regardless of skill. Therefore, the nature of duties on submarines will be analyzed with emphasis devoted to measuring retention in "non-transferable" skills as the best measure of the adversity of submarine duty. Transferable skills usually receive other bonuses that could possibly overcompensate for the skill and thus provide additional compensation for the duty (submarine), resulting in inaccurate estimates of the adversity of submarine duty.

The second issue that must be addressed is the benefit and cost of providing Submarine Duty Incentive Pay on a career basis with gates to insure minimum service in operational submarine duty versus alternative

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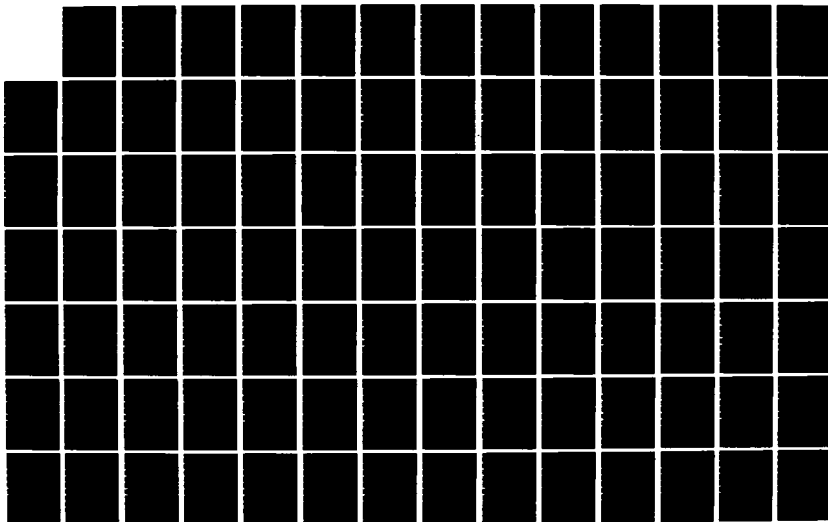
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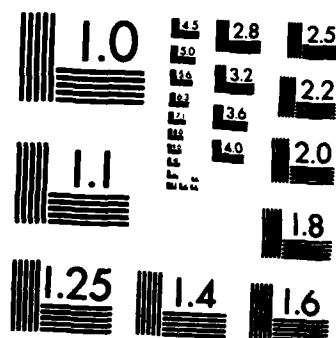
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methods of providing compensation for adverse or arduous duty. The gate system has been in place since 1 January 1981, and this analysis is the first opportunity to examine it closely. Although ACIP with a similar gate system has been in effect since 1974, it is compensation for a skill that is marketable whether the individual is performing flight duty or not. Submarine Duty Incentive Pay is distinctly different in this respect.

These issues are the heart of the rationale underlying the necessity for Submarine Duty Incentive Pay. Other issues, such as manning levels, Career Sea Pay, allowances, and those that may impact retention patterns, will be examined when they provide insights relevant to policies that may affect the level or structure of Submarine Duty Incentive Pay.

V. ANALYSIS.

A. NATURE OF SUBMARINE DUTY. This is the most important issue that must be analyzed in conducting a review of Submarine Duty Incentive Pay. Unfortunately, there is no index that can be used to assess the adversity of duty in submarine service relative to some standard for which no special pay would be required. The Navy was asked to provide specific data describing unique or unusual aspects of careers in submarine service, particularly those factors not compensated for by other special or incentive pays (e.g., Career Sea Pay, Nuclear Pays, SRBs). Four such areas were identified:

- operation in a hazardous environment throughout the length of a career;
- high operational tempo;
- long separation in a totally isolated environment;
- enduring longer working hours and spending a higher ratio of the length of a career at sea due to a long history of low retention in an already small submarine community.

It is clear that these conditions would serve to dissuade an individual from submarine service, but what is not clear is what can and should be done in the form of monetary or non-monetary compensation to offset these negative aspects. In the ORMC analysis of Career Sea Pay, 13 factors contributing to the unique and arduous nature of sea duty were identified. They are listed in Appendix A. For seagoers in general the two greatest factors contributing to the adversity at sea are: (1) long working hours, and (2) separation from family and friends. It is likely that to a greater degree, all 13 factors contribute substantially to the arduousness of submarine duty when compared to surface duty at sea. Interviews with sailors (surface and submarine) confirmed that they perceive this relationship to be true. One considers the four areas identified above valid, it is appropriate that members of the submarine service receive compensation for these conditions.

During the analysis, sea duty time was examined because it is the only known measurable estimator of the arduousness of submarine duty. Data were extracted from Navy reports on officers performing duty where Sea Pay was authorized. This method is recognized to be different than the Navy's method of computing sea-duty time for rotation purposes. Submarine officers were compared to all surface officers. Table 2 shows that O-3 and O-4 submarine officers receiving Sea Pay actually have less sea pay credit than surface officers. However, this situation is slightly reversed for O-5's.

Table 2
Submarine and Surface Officers Sea Duty
(Officer at Sea as of End FY82)

	Percentile				
	25%	50%	75%	90%	IQR
<u>O-3</u>					
Submarine	1.09	2.02	2.96	4.38	1.87
Surface	2.19	2.92	3.88	5.10	1.69
<u>O-4</u>					
Submarine	3.71	4.97	6.73	8.27	3.02
Surface	5.20	6.20	7.32	8.50	2.12
<u>O-5</u>					
Submarine	7.67	9.18	10.95	12.61	3.28
Surface	6.97	8.15	9.61	11.16	2.64

NOTE: Results do not include officers ashore as of end FY82. Sea Duty for such officers may not be accurate, as their pay is unaffected while ashore. IQR is the interquartile range - the difference between the 75th and 25th percentiles.

With regard to consecutive years of sea duty, there is little difference between submarine and surface officers in aggregate. Table 3 shows that 8.7% of all surface officers at sea have more than 3 consecutive years at sea, while 8.6% of all submarine officers have more than 3 consecutive years of sea duty. When examined by grade the data show that three or more years at sea is more common for O-4's and O-5's in submarine service than for their surface counterparts. In pay grades below O-4 or above O-5, the circumstances are reversed.

Table 3
Percent of Submarine and Surface
Officers Receiving Sea Pay Premium
(>3 Years Consecutive Sea Duty)

Category	<u>O-1/O-2</u>	<u>O-3</u>	<u>O-4</u>	<u>O-5</u>	<u>O-6</u>	<u>Total</u>
Submarine	0.1%	10.7%	18.6%	33.0%	3.9%	8.6%
Surface	0.1%	18.3%	15.0%	9.1%	6.1%	8.7%

Source: Navy Finance Center

For enlisted personnel, the amount of sea duty performed was not readily available in a form similar to that displayed for the officer force. However, information was available on the percent of enlisted population receiving Sea Pay and Sea Pay Premium for various groups within the Navy. Additionally, the entire enlisted submarine community could not be identified from the data source, but the enlisted men in nuclear propulsion which account for about 10,000 of the 31,000 members of the enlisted submarine force were identifiable. For purposes of examining sea duty, the nuclear enlisted force was compared with all Navy and with surface ship propulsion and power. The two subgroups are essentially engaged in the same task, that of operating the ship's power plant; the only differences are the kind of power plant and kind of ship. Not surprisingly, the proportion of enlisted men on sea duty in these two groups are very similar and at a level significantly higher than the all-Navy levels. The data show that in aggregate there is a 27% greater chance that an individual in one of these two occupations will be at sea in comparison to the all Navy rates. Whereas the all-Navy sea duty rate was 52%, these two occupations had about 65% sea duty. The results are displayed in Table 4. Some differences are notable by grade, but most data were very close. The same source of data was used to examine consecutive time at sea. Again, there is little difference in aggregate for the two sub-categories, with a little over 10% having more than 3 consecutive years' sea duty compared to the all-Navy rate of 6.5%. The probability of having more than 3 consecutive years sea duty is at least 50% greater for enlisted personnel employed in nuclear or non-nuclear ship propulsion than the all-Navy probability of 6.5%. For all-Navy, nuclear propulsion, and non-nuclear propulsion, the record counts were 146,045, 14,584, and 56,118, respectively.

Table 4
Percent Performing Sea Duty
Nuclear or Non-nuclear Propulsion and All-Navy

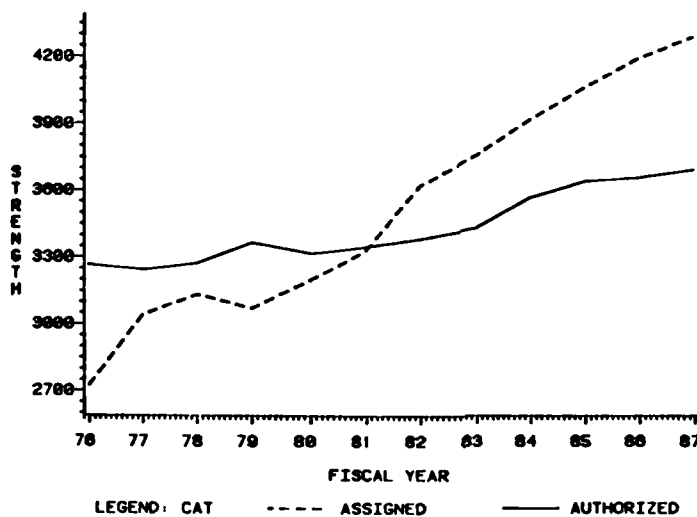
	SEA PAY			SEA PAY PREMIUM		
	ALL NAVY	SHIP PROPULSION	NUCLEAR	ALL NAVY	SHIP PROPULSION	NUCLEAR
E-4	52%	64%	51%	2.8%	4.1%	2.6%
E-5	58%	74%	74%	8.4%	13.7%	10.9%
E-6	46%	62%	59%	7.8%	13.7%	13.3%
E-7	47%	64%	62%	8.7%	16.5%	15.1%
E-8	41%	54%	53%	6.6%	13.9%	13.7%
E-9	40%	48%	48%	4.6%	7.2%	8.8%
TOTAL	52%	66%	65%	6.5%	10.3%	11.2%

NOTE: Ship propulsion includes DoD occupational code 65 and 66 except 661 which is shown in the Nuclear column.

B. SUBMARINE MANNING/RETENTION. Since the intended purpose of Submarine Duty Incentive Pay is to provide sufficient incentive to induce people to pursue duty in submarine service, it is also important to compare authorized strength with the supply of submarine personnel. Additionally, it is necessary to analyze the retention pattern of submarine personnel to determine if the compensation stream available over a career is achieving the desired force profile. The most positive and flexible control system for achieving specified force profiles is the Selective Reenlistment Bonus program for enlisted personnel and the Nuclear Continuation Bonus for officers. Ideally, Submarine Duty Incentive Pay is compensation and incentive to encourage officers and enlisted alike to endure the objectionable factors associated with submarine duty that have been identified in the preceding section. The level of compensation required to adequately serve as such an incentive is likely to vary as one progresses through a career, so the levels of Submarine Pay should vary accordingly to achieve the desired force structure. The following analysis examines these aspects of submarine service.

1. Officers. Figure 1 shows the overall submarine manning from FY76 to present and projected from FY83 to FY87 for officers in grade O-1 through O-5. Table 5 is a detailed breakout of manning by grade. It is quite evident that the distribution of strength does not match the requirements pattern. Submarine Pay has only been in existence since 1 January 1981 in its present form and cannot be expected to correct the obvious imbalance in so short a period of time. Moreover, the imbalance is likely to persist for years to come. This problem will only be cor-

Figure 1
SUBMARINE MANNING
O-1 THROUGH O-5



NOTE: Authorization level includes shore billets required for balanced shore rotation.

rected over the long term if the accession levels and retention patterns resulting from the current expected pay stream match requirements in future years. A detailed discussion of the comparative strength and grade inventory versus authorizations is contained in the Nuclear Officer Pays of this volume, paragraph V.C. and Appendix D. Here again, although the numbers are adequate, grade distribution remains the important problem.

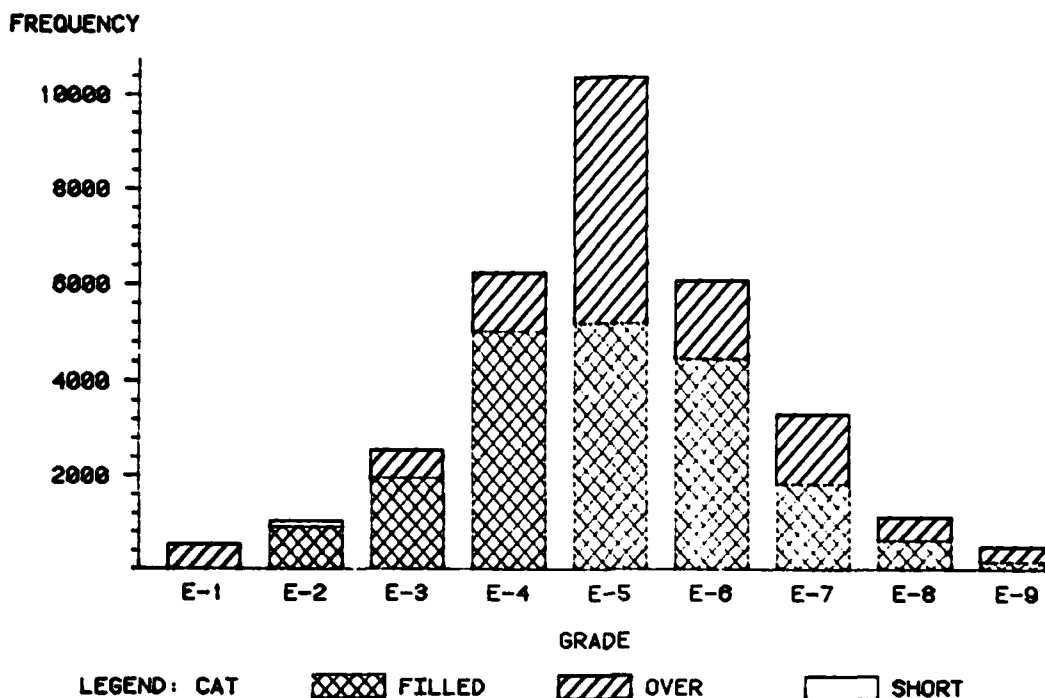
Table 5
Officer Submarine
Manning

	<u>76</u>	<u>78</u>	<u>80</u>	<u>82</u>	<u>84</u>	<u>86</u>	<u>88</u>
<u>O-1 - O-2</u>							
Auth	619	755	710	713	722	733	743
Z	-	130	153	208	236	255	237
<u>O-3</u>							
Auth	1250	1115	1190	1235	1313	1341	1346
Z	-	84.6	84.4	93.4	96.4	99.6	115.8
<u>O-1 - O-3</u>							
Auth	-	1870	1900	1948	2035	2074	2089
Z	-	103	110	135	145.9	154.7	159.1
<u>O-4</u>							
Auth	896	876	891	914	994	1014	1016
Z	-	77.0	68.6	64.3	56.1	57.8	61.2
<u>O-5</u>							
Auth	499	529	528	524	541	572	587
Z	-	100.5	93.9	76.0	72.3	69.4	69.3
<u>O-4 - O-5</u>							
Auth	-	1405	1419	1438	1535	1586	1603
Z	-	85.9	78.0	68.6	61.8	62.0	64.2
<u>O-1 - O-5</u>							
Auth	3264	3275	3319	3386	3545	3598	3618
Z	83.5	95.6	96.4	107	110.5	116.5	120.3

NOTE: Authorization includes shore billets required to achieve balanced shore rotation.

2. Enlisted. Figure 2 shows the FY82 manning for the enlisted submarine force. This figure shows all grades sufficiently manned except E-2's, which are slightly short. Appendix B contains detailed numerical manning information from FY80 through FY87. The data show that there is a sufficient supply of enlisted men to meet Navy requirements. Enlisted personnel in excess of Navy requirements are available for shore assignment and/or duty outside their primary skill.

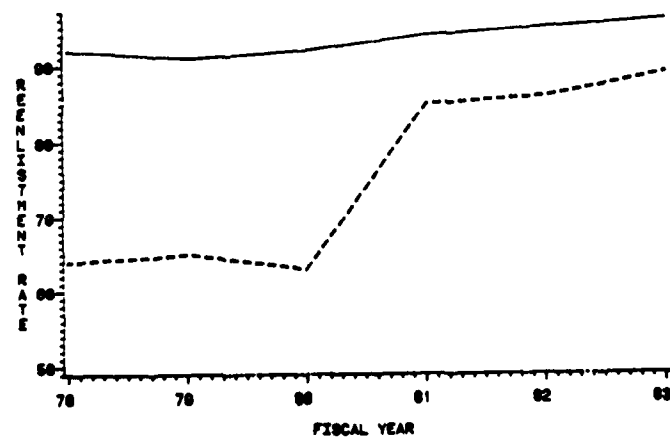
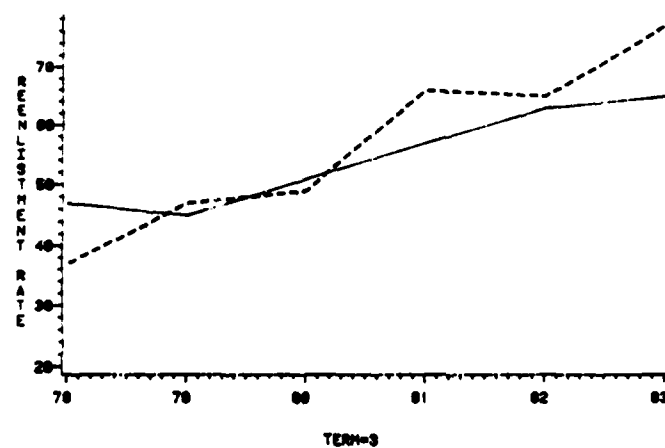
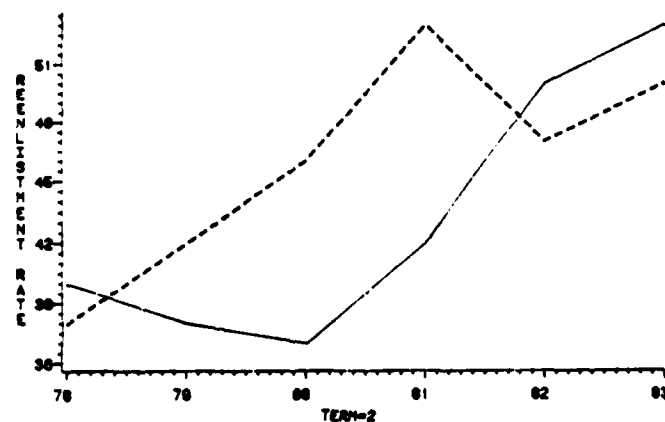
Figure 2
FY82 ENLISTED MANNING
ALL SUBMARINE SKILLS



NOTE: Authorizations exclude 4,580 training and 1,226 staff billets not allocated by grade.

Figure 3 shows how submarine reenlistment rates have fared relative to all-Navy reenlistment rates. Submarine reenlistment rates have been consistently lower, but have been about the same or higher for first and second reenlistments. Improvements after 1 January 1981 are evident from these graphs, but the effect of Submarine Pay alone cannot be credited fully, as the influence of Sea Pay increases and other compensation initiatives cloud the analysis. According to the Navy, the temporary decline in first-term reenlistment rates in FY82 may be attributable to a volatile SRB program and policy changes regarding early reenlistments. Currently only 3 (hospital corpsman, storekeeper, and yeoman/personnelman) of 18 skills required on a submarine are not part of the SRB program.

Figure 3
REENLISTMENT RATES
TERM=1



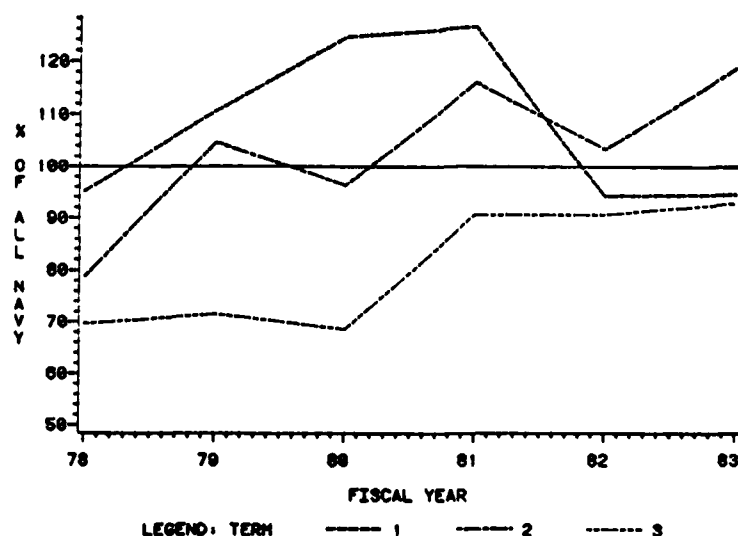
NOTE: FY83 rates are projected based on experience in FY83 through June.

Figure 4 is a plot of the ratio of submarine reenlistment rates to all-Navy reenlistment rates. It is easier from this graph to ascertain changes in reenlistment rates caused by factors that did not affect Navy rates. The Navy rate is represented by the horizontal line at 100%, while changes in submarine reenlistment rates not caused by factors affecting all-Navy rates are represented by the difference in the vertical distance. For example, in Figure 3 for the first term, there is a steep increase from FY80 to 81 for submarine enlisted personnel. It would be a mistake to conclude that the increase is entirely attributable to Submarine Pay. The same graph shows that Navy wide there was a significant improvement in reenlistment rates over that interval. Figure 4 is a graphical method of controlling for the prevailing upward trend. It shows a relatively small improvement in the first term from FY80 to FY81, whereas the second and career reenlistment rates seem to have been very positively affected by factors not influencing the all-Navy rate, such as Submarine Duty Incentive Pay. Perhaps this tells us that a switch to a career pay significantly affects "stay" rates of people who have already decided to remain another term, but is relatively unimportant to junior individuals making their first stay/leave decision.

If this hypothesis is true, it is consistent with the theory that senior people have lower personal discount rates, and thus pay that is commuted over a long period of time is of higher value to them than it is to junior enlisted personnel. The upward shift is very apparent for 3rd term reenlistment rates; a shift is present but less apparent for 2nd term reenlistments and almost absent from first-term reenlistments.

Figure 4

SUBMARINE REENLISTMENT RATES PERCENT OF ALL NAVY RATE



*FY83 projected as in Figure 3.

C. STRUCTURE OF THE PAY. In 1955, when Submarine Pay was worth about 44% of basic pay, it was of tremendous incentive value. The money was only available to people assigned to submarines and was an incentive pay for duty considered hazardous. If there were, in fact, an increased probability of death or disability one might expect somewhat lower responsiveness than the reenlistment analogy suggests, since there is no possibility of death or injury upon reenlistment. Nonetheless, the incentive was large in value but narrowly targeted by virtue of the fact that the incentive was unavailable to individuals ashore. The trend in this and other special and incentive pays in recent years has been to reduce the incentive aspect of the pay by commuting its amount over a longer period of time. It seems that the Services have adopted the approach that a level, periodic income is of more importance to the individual than career earnings at least as high without the leveling aspect. This is particularly true in the case of pays where continuous service within a given community, i.e., submarine, aviation, etc., is desired. There is, so far, no empirical indication that this is a correct interpretation of human behavior. Certainly, it is correct to conclude that once income is received on a regular basis, it is preferred that the arrangement not be disturbed. People may actually prefer occasional irregular extra pays as symbols that what they have done or how they have served is important. There is, however, insufficient evidence to support either approach. Though we do not know with certainty what servicemembers like, we do know that they respond to higher pays and will often do what is necessary to get them. People will accept higher pay passively, but may not actively pursue arduous or dissatisfying duty unless there is a prospect of some benefit, monetary or otherwise. "Gate systems" have been employed as one technique to establish nonpassive behavior or to eliminate from incentive pay eligibility those members no longer in the career. This section will examine gate systems and other methods of effecting desired behavior, in addition to the current level of Submarine Duty Incentive Pay.

To insure that each individual receiving career Submarine Pay is still in a submarine career, the Navy has implemented a gate system patterned after the operational gates for aviators. Since this system is relatively new for submarine personnel, it is appropriate to review its effectiveness thus far. Automated Navy officer personnel files were searched to tabulate by years of submarine service the number of individuals who were authorized continuous Submarine Duty Incentive Pay and those submarine officers not authorized CONSUB. The results shown in Table 6 indicate that, overall, 7.5 percent of the officer submarine force are not authorized CONSUB. These officers may not have sufficient operational service, or may have failed selection for assignment as an executive or commanding officer, or for some other reason have been removed from the career mainstream. Significant differences are shown between officers of nuclear- and diesel-powered submarines. The Navy believes that the gate system has been very effective in appropriately identifying and deleting from CONSUB eligibility those personnel no longer in a submarine career. In fact, 21.5% with between 12 and 18 years of service are no longer eligible for continuous Submarine Pay.

Table 6
Operational Submarine Service

	RECEIVING CONSUB			NOT RECEIVING CONSUB		
	FREQUENCY	ROW %	COMBINED %	FREQUENCY	ROW %	COMBINED %
<6	1998/300	98.8/98.7	98.8	25/4	1.1/0.2	1.2
6-12	591/219	99.3/96.9	98.7	4/7	0.5/.9	1.3
<12	2589/519	98.8/97.9	98.7	29/11	0.9/.3	1.3
12-15	131/62	79.4/8.5	79.8	34/15	14.0/6.2	20.2
16-18	138/24	97.2/61.5	88.5	6/15	3.3/8.2	11.5
12-18	269/86	80.9/74.1	78.5	40/30	12.3/9.2	21.5
<18	2758/605	97.6/93.7	96.8	69/41	2.0/1.2	3.2
18-22	191/57	71.5/58.2	67.9	76/41	20.8/11.2	32.1
23-26	64/47	65.3/54.7	60.3	34/39	18.5/21.2	39.7
18-26	255/104	69.9/56.5	65.4	110/80	20.0/14.6	34.6
<26	3013/709	94.4/85.4	92.5	179/121	4.5/3.0	7.5

NOTE: Data in this table was extracted from Navy personnel files. Format is Nuclear/Diesel. Percents in RECEIVING CONSUB column are percent of Nuclear or Diesel respectively. Percents in NOT RECEIVING CONSUB are percent of total row population.

The arduous nature of operational submarine duty may have aspects that discourage retention. If a junior service member is in a situation where he must return to operational duty now or forfeit the pay when he reaches 12 years, he may decide instead to just leave the Navy rather than face arduous operational duty at the same Submarine Pay he received ashore. Such an individual will receive Sea Pay, but it is targeted at the typical adversities at sea. There is little disagreement that the arduousness of sea duty on a submarine is atypical indeed. Thus, Sea Pay alone may be insufficient motivation to return to operational submarine duty when civilian employment is a viable alternative. At the high discount rates of junior servicemembers, it is not likely that they will stay and return to submarine duty for the promise that the pay will not stop when they eventually reach 12 years. At high discount rates, this promise is of relatively low value, since the benefit for returning to sea now will not begin until they reach 12 years of submarine service. A large immediate incentive may be of greater value and more effective for junior personnel. On the other hand, a drop in career Submarine Pay in order to perform the shore duty required by their career pattern may also discourage retention.

Continuous Submarine Duty Incentive Pay begins on the first day of instruction leading to duty on a submarine. For a nuclear officer, the pay will begin about 1.5 years before the officer is assigned to a submarine. There is no addition to pay at this important point in the officer's career to recognize the arduous nature of his first operational duty. For some enlisted personnel the training is significantly shorter, but Submarine Pay also starts at the beginning of training. From field interviews at several locations, we were informed by enlisted submarine personnel that some of their classmates in submarine school graduate and never perform submarine duty but are authorized Submarine Pay. Some delays are understandable because of mismatches between training pipeline flow and required personnel replacement rates. But if the delays are excessive, as these interviews have suggested, then the Navy must establish rigorous procedures to correct the inequitable situation perceived by personnel in the field. The Navy indicates that this situation developed during 1980-82 due to unplanned construction delays in the TRIDENT submarine program and that currently all who complete submarine school are sent to submarines. Those personnel that attended submarine school but were not assigned to submarine duty have been removed from eligibility for Submarine Duty Incentive Pay.

Legislative backup material for this pay shows that the Navy wanted to pay officers on a continuous basis and leave enlisted personnel on an operational basis only (like Aviation Career Incentive Pay and enlisted hazardous duty flight pays)[3]. It was considered unfair to pay officers but not enlisted personnel while ashore, so the legislation was rewritten to pay enlisted while ashore, provided they had sufficient retainability to return to a sea billet when they rotate ashore. (Until the finance routines are updated certain individuals may be receiving CONSUB without the required retainability. In the interim, it is the servicemember's responsibility to notify the finance office when he no longer qualifies for CONSUB.) Since Navy and legislative documentation shows that there was no intention to pay enlisted personnel while ashore, and that it was done only as a matter of equity, then one may conclude that the resulting added cost represents the equity overhead of a "career" incentive pay. Considering the enlisted shore rotation, this cost can be as much as 30% of the total enlisted budget for this pay. Commitments should not be tied to compensation that is paid as a matter of equity, for to do so is an inequity in and of itself, since officers need not obligate themselves in any way to receive the pay while ashore.

D. LEVEL OF SUBMARINE PAY. The current Submarine Pay rates were established in 1 January 1981. Prior to that time there had been no rate changes since 1955. Table 7 below shows the basic pay rate in October 1955 and October 1980 to demonstrate how the incentive value of the pay had eroded in value. Whereas in 1955, Submarine Pay was about a 44% addition to basic pay, in 1980 it was at about 10%. At current elasticities, a 44% increase to basic pay would be \$375 per month, and we could predict a 72% increase in reenlistment rates for first-term sailors if such an increase was part of a reenlistment contract. The new rates established on 1 January restored that value to approximately 19%, but it is now available while ashore, as well.

Table 7
Pre-1981 Basic Pay and
Submarine Pay Comparison

	Basic Pay (\$)		Sub Pay*	%Addition to Basic Pay	
	Oct 55	Oct 80		Oct 55	Oct 80
E-3>3	117	637	60	51.3	9.4
E-4>4	160	727	70	43.7	9.6
E-5>8	203	829	85	41.9	10.2
E-6>12	242	992	95	39.3	9.6
E-7>16	289	1170	105	36.4	9.0
O-2>3	335	1397	150	44.7	10.7
O-3>6	406	1692	180	44.4	10.6
O-4>12	499	2048	215	43.1	10.5
O-5>18	608	2577	245	40.3	9.5

*Rate paid from 1955 to 1 January 1981.

Table 8 shows that, after adjusting for inflation, the value (in June 1983 constant dollars) has eroded from \$5,173 per officer recipient annually in 1972 to \$2,515 in 1980. The new rates restored the value to \$3,496 annually on a career basis, but it has again begun to decline in value due to inflation since January 1981. The Navy has a pending legislative proposal to raise the rates by about 20% to restore the value of the pay, since it has dropped from about 19% of basic pay to approximately 15% of basic pay. The projected cost of this increase is estimated to be about 12 million dollars.

Table 8
Annual Value of Submarine Pay 1972 to 1984*

	Officer		Enlisted	
	Actual\$	June 83\$	Actual\$	June 83\$
72	2,176	5,173	961	2,285
73	2,179	4,891	972	2,182
74	2,194	4,439	982	1,987
75	2,173	4,021	982	1,817
76	2,169	3,790	979	1,710
77	2,154	3,521	951	1,555
78	2,120	3,226	931	1,417
79	2,096	2,872	913	1,251
80	2,097	2,515	904	1,084
81	3,193	3,496	1,417	1,552
82	3,411	3,494	1,580	1,619
83	3,431	3,431	1,585	1,585
84	3,529	3,361	1,601	1,525

*5% inflation assumed between June 83 and June 84.
Costs were estimated as actual budget divided by
actual recipients.

If Submarine Duty Incentive Pay is to remain viable, several options must be considered when reviewing its potential as a true incentive. Some alternatives examined were:

1. Retain the current system and adjust the rates uniformly when there are indications that retention is declining below acceptable levels.
2. Provide an immediate increase, but target the budget increase to those performing arduous operational duty.
3. Stop payments to individuals ashore; rechannel these monies to those people performing operational duties.
4. Revise the present system by starting Submarine Pay when first assigned to operational duty instead of the beginning of training, and require that officers have some form of obligated service agreement (i.e., COPAY) while receiving Submarine Pay ashore.

Alternative 1 is the present system which has been characterized in detail in the preceding analysis.

Alternative 2 has several desirable features. First, it would provide the increase in career earning necessary to maintain retention at acceptable levels. It would also encourage and reward those performing operational duty. For junior members the immediate and significant recognition would be of more value and supply greater motivation than a smaller increase that would result by spreading the amount evenly over an entire career. As mentioned earlier, the Navy has legislation pending to provide a 21.8% uniform increase to Submarine Pay. If inflation in the second half of 1983 matches the first half, then an 18.6% increase effective in January 1984 will have the same value as the rates in January 1981. An 18.6% increase in the officer budget would be 3.4 million dollars. If all of the resulting budget increases are targeted only to the officers performing operational duties, then an 18.6% increase in budget would result in a 45% increase for the officers performing the most arduous duty in adverse conditions. For enlisted personnel, an 18.6% increase in the budget would be 9.7 million dollars, or \$460 for each individual performing operational service. With the budget increase targeted to operational billets only, the same budget could provide a 30% increase instead of just 18.6%. Under this alternative, payment would not stop entirely upon reassignment to a shore or staff billet, but would reduce to the rates currently authorized. In essence, a 30% to 45% premium would be paid for operational duty. However, a subsequent drop in pay to fill shore billets necessary for accomplishment of mission objectives is likely to have negative impact on retention. The gate system would remain in its present form, but the Navy should consider stopping payment of CONSUB as soon as it is apparent that an individual would fail a gate rather than waiting until 12 or 18 years before payment stopped.

The third alternative would stop payment altogether while ashore or in a staff billet. Subsection A of this section enumerated the justification for Submarine Pay, but it did not outline reasons for paying Submarine Pay ashore. Legislative backup materials addressed the issue of Submarine Pay while ashore:

The extension of submarine duty incentive pay eligibility to include those years a submarine officer spends on shore duty will increase the attractiveness of the submarine career path...

...the submarine officer contemplating a career decision is faced with a career path offering only limited shore duty and requiring a cut in pay for those years that are spent on shore duty.

The provision of continuous submarine duty incentive pay eligibility for submarine officers will remove this negative factor...

This indicates that there were two reasons why the pay was authorized while ashore:

- increase the attractiveness of the submarine career path
- avoid a drop in pay while ashore.

Both of these reasons may be important, but the first should clearly be the primary motivation to pay Submarine Pay while ashore. The submarine service is an identifiable separate community. Volunteers are recruited into submarine service mostly at the beginning of their military careers. Although there is lateral entry to some submarine skills, all remain identified as submarine resources afloat and ashore. Submarine Pay may be viewed as necessary compensation to individuals for the rigors of a submarine career, and to provide an incentive to enter and remain on active duty in submarine service for a full career. Avoiding a drop in pay while ashore should be considered a result rather than a reason for continuous Submarine Duty Incentive Pay. Ultimately, the justification for payment ashore must be that it is unreasonable to keep service members in operational positions when shore and staff positions are needed to accomplish mission objectives and to afford reasonable shore rotation, and finally, that it is expected that service members frequently return to operational duty.

The fourth alternative would revise the present system to preclude payment until the new accession reached his first operational assignment and to require that officers be under a form of obligated service agreement while receiving submarine pay ashore. These modifications can be applied to any of the above alternatives except the third, which already addresses the issues related to payment while not performing operational duties. Navy considers that payment of Submarine Pay to new accessions

has been very effective in attracting volunteers to a submarine career. This provision has been in effect only since 1981 and should be re-evaluated in two years.

E. OTHER OBSERVATIONS. The accession and training cost for enlisted submarine personnel is not high, and many enlisted skills required on a submarine are also required in other sectors of the Navy. Furthermore, the operational gates for submarine service are less restrictive than the gates established for aviation service and the rates are about 10% higher for submarine service. So it becomes especially important that the gate system be managed well. Other added complexities require careful management. For example, Submarine Pay is dependent on grade and years of creditable active service (commissioned service for officers to prevent early loss of entitlement to senior officers with prior enlisted service), but ACIP is based on years of service only, not on grade. There is no clear purpose for this added complexity. Although Congress authorized a "look-back" system whereby at each gate a servicemember's record is examined to determine if operational requirements have been met, prudent management would suggest that prospective, in addition to retrospective, aspects should be incorporated into the system. There is no systematic "look-ahead" to determine if a gate will be missed unless the individual returns soon to operational duty on board a submarine. Without such positive controls, the number of people drawing continuous Submarine Pay while serving in a non-submarine associated billet who cannot meet their gate requirements may be excessive. It is recognized that people who cannot make the gate will still receive this pay while actually serving in a submarine-associated billet. Under such circumstances, the Navy should consider stopping payment of CONSUB as soon as such a determination can be made rather than waiting until 12 or 18 years service before payment stops, as it becomes apparent that an individual would fail a gate rather than waiting until 12 or 18 years before payment stops.

F. COMPENSATION FOR SUBMARINE DUTY IN GREAT BRITAIN. The pay structure of the Armed Forces of Great Britain is similar in many respects to that of the U.S. Armed Forces. Submarine Pay, like a few other special pays, are called major pays and are paid on a career basis provided the recipient maintains the qualifications and is subject to submarine duty. Certain other pays are called minor pays and are payable only when certain duties or conditions of service are required of an individual. The British government is currently reviewing the major pays to determine if such a system adequately fulfills its intended purpose [5]. Table 9 below shows annual pay and submarine pay for various ranks within the Royal Navy. Though the Royal Navy uses nuclear propulsion, there are no additional pays for officers, but senior enlisted personnel do receive extra pay for skills in nuclear power. Except for Sea Command Money of £1 (\$1.50) per day, officers would normally receive no additional pays. All Enlisted personnel may qualify for lump-sum retention bonuses up to £1,000 (\$1,500) twice in their careers.

Table 9
British Annual Pay and Submarine Pay

<u>Approx time in Service</u>	<u>Grade</u>	<u>Time in Grade</u>	<u>Annual Pay</u>	<u>Submarine Pay</u>	<u>% Addition</u>
5	Lieutenant	2	11,017(16,525)	1,865(2,798)	16.9
8	Lieutenant	5	11,862(17,793)	1,865(2,798)	15.7
12	LCDR	3	14,201(21,301)	1,865(2,798)	13.1
15	LCDR	6	15,178(22,767)	1,865(2,798)	12.3
21	CDR	4	18,801(28,201)	1,865(2,798)	9.9
	Marine 1st Class		6,008(9,012)	1,303(1,954)	21.7
	Petty Officer		8,749(13,123)	1,434(2,151)	16.3
	Chief Petty Off		9,968(14,952)	1,726(2,589)	17.3

NOTE: In addition all crew members of submarines may qualify to receive 219 (\$328) per year of Hand Lying Money while at sea as compensation for living conditions below an established standard. Numbers in parenthesis are U.S. dollars equivalents.

VI. FINDINGS.

A. The primary purpose of Submarine Duty Incentive Pay is to encourage members of the Navy, both officers and enlisted personnel, to pursue a career in the submarine service. Additional incentive is necessary due to the adverse conditions associated with an operational submarine duty career. These conditions exceed the arduous nature of surface sea duty and, thus, it is appropriate to provide compensation over and above that provided by Sea Pay.

B. Submarine Duty Incentive Pay has resulted in improved retention of officer and enlisted submarine resources; the most notable improvements that can be attributed to this pay have occurred among the more senior enlisted groups. The QPMC recommendation for expanded implementation of Nuclear Officer Continuation Pay should help correct the problem of senior submarine officer shortages by increasing both the magnitude and duration of available special pay. QPMC proposals to enhance the Selective Reenlistment Bonuses and the Nuclear Officer Incentive Pays should provide needed improvements in retention incentives for other personnel.

C. Submarine Pay is paid to an individual before he reports for duty to his first operational submarine. This is uncharacteristic of other special pays (e.g., Aviation Career Incentive Pay and Hazardous Duty Incentive Pay) authorized while in training, in that individuals are not exposed to the arduous aspects of submarine duty until after the completion of training, which is frequently a year and a half in duration. This aspect of Submarine Duty Incentive Pay is designed to augment the other attraction incentives associated with a career in Submarine Service. The relative newness of Submarine Pay while in training coupled with the

length of the training pipeline has resulted in little data to properly evaluate its effectiveness. It should be retained during the training period, but evaluated for effectiveness in about two years when its impact can properly be measured.

D. The requirement that enlisted personnel incur sufficient obligation to allow assignment to submarine duty upon completion of shore duty is an effective personnel management tool. Implementation of the COPAY enhancements recommended by the QRMC is expected to have a similar effect for officers while satisfying other needs as well.

VII. RECOMMENDATIONS.

A. Retain Submarine Duty Incentive Pay in its present form.

B. In about two years, review the provision of Title 37 that permits payment of Submarine Duty Incentive Pay upon commencement of training leading to duty on an operational submarine. At that time there should be sufficient data to analyze its effectiveness.

References

- [1] Military Compensation Background Papers, Second Edition July 1982 Department of Defense, Office of the Secretary of Defense.
- [2] Secretary of Navy Instruction 7220.80, 26 July 1982.
- [3] "Special Pay and Allowances Benefits for Members of the Uniformed Services," Senate Report No. 96-1051, 3 December 1980.
- [4] Preliminary Analysis of Military Compensation Systems in the United States and five other countries, General Accounting Office, December 1980.
- [5] Review Body on Armed Forces Pay, Twelfth Report 1983 Presented to Parliament by the Prime Minister by Command of Her Majesty, May 1983.
- [6] Report of the 1971 QRMC of Flight Hazard Submarine Pay, Office of the Assistant Secretary of Defense, December 1971.

NATURE OF SEA DUTY

One of the cited purposes of Career Sea Pay is to provide special compensation to personnel for serving in ships where they undergo on a continuing basis arduous duty which is greater than the normal rigors of military life and more arduous than those confronting individuals in the private sector. Among the many factors contributing to the unique and arduous nature of sea duty are:

- (1) cramped living and working conditions aboard ship;
- (2) the unpredictability of operating schedules of Navy ship (e.g. deployments extended for months, ships diverted, etc.);
- (3) limited recreational facilities at sea;
- (4) inport duties assigned to shipboard personnel to maintain ship readiness (which often severely restricts liberty time when the ship is finally inport);
- (5) long and arduous working hours at sea;
- (6) long and repetitive deployments often interspersed with shifts of homeport;
- (7) the length and emotional hardships of family separations;
- (8) lack of personal freedom and certain legal rights;
- (9) environmental conditions (unstable platform, etc. - even a "salty" sailor gets weary after a lengthy transit in heavy seas);
- (10) lack of adequate medical and dental facilities onboard many units;
- (11) increased expenses for the individual (e.g., more wear and tear of clothing, government will not store automobiles, etc.);
- (12) hazardous working conditions (e.g. boiler rooms, refueling and replenishment at sea, small boat handling in heavy seas such as for pilot rescue, etc.); and
- (13) reduction of disposable income (e.g., for single personnel the loss of BAO, VHA and BAS when assigned to sea).¹²

AUTHORIZATIONS

<u>RATE</u>	<u>FY 82</u>	<u>FY 81</u>	<u>FY 80</u>
E9	164	158	153
E8	625	601	581
E7	1838	1772	1717
E6	4460	4304	4174
E5	5195	5033	4898
E4	5021	4865	4735
E3	1957	1891	1836
E2	1063	982	937
E1	--	--	--
TOTAL (2)	20324	19606	19031
STAFF (1)	1226	1226	1226
TRAINING	4580	5373	6628
TOTAL AUTH.	25130	26205	26885

(1) No grade is attached to each enlisted Staff billet. The majority of these billets is filled by submarines after their first sea tour. The nominal paygrade for such an individual is E-6.

(2) Not distinguishable by submarine type.

INVENTORY

<u>PAYGRADE</u>	<u>FY 82</u>	<u>FY 81</u>
E9	497	299
E8	1140	943
E7	3320	2837
E6	6086	5021
E5	10394	9287
E4	6242	6600
E3	2563	2629
E2	912	1108
E1	531	445
TOTAL	31685	29169

SUB School training cost - length 5.8 wks - \$3871/enlisted

ALLOWANCE

<u>PAYGRADE</u>	<u>FY 83</u>	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>
E9	170	176	179	185	191
E8	653	681	700	728	756
E7	1902	1966	1997	2028	2059
E6	4628	4796	4889	5057	5225
E5	5379	5563	5666	5850	6034
E4	5195	5369	5459	5633	5807
E3	2035	2113	2158	2236	2314
E2	1099	1135	1167	1203	1239
E1	--	--	--	--	--
TOTAL	<u>21061</u>	<u>21799</u>	<u>22215</u>	<u>22953</u>	<u>23691</u>
STAFF	1226	1226	1226	1226	1226

(1) No grade assigned to Staff billets.

SUB SCHOOL ACCESSIONS

FY 83	-	5585
84	-	5355
85	-	5395
86	-	5410
87	-	5420

SUB school training cost: \$3871 per enlisted student

SUBMARINE PAY PROJECTED COST

<u>YEAR</u>	<u>BUDGET</u>
FY 83	51.705M
FY 84	52.247M
FY 85	52.060M
FY 86	52.060M
FY 87	52.060M

SUMMARY OF RESPONSES

Submarine Duty Incentive Pays

Issues:

1. The primary purpose of Submarine Duty Incentive Pay is to encourage members of the Navy, both officers and enlisted personnel, to pursue a career in the submarine service. Additional incentive is necessary due to the adverse conditions associated with an operational submarine duty career. These conditions exceed the arduous nature of surface sea duty and, thus, it is appropriate to provide compensation over and above that provided by Sea Pay.

2. Submarine Duty Incentive Pay has resulted in improved retention of officer and enlisted submarine resources; the most notable improvements that can be attributed to this pay have occurred among the more senior enlisted groups. The QRMC recommendation for expanded implementation of Nuclear Officer Continuation Pay should help correct the problem of senior submarine officer shortages by increasing both the magnitude and duration of available special pay. QRMC proposals to enhance the Selective Reenlistment Bonuses and the Nuclear Officer Incentive Pays should provide needed improvements in retention incentives for other personnel.

3. Submarine Pay is paid to an individual before he reports for duty to his first operational submarine. This is uncharacteristic of other special pays (e.g., Aviation Career Incentive Pay and Hazardous Duty Incentive Pay) authorized while in training, in that individuals are not exposed to the arduous aspects of submarine duty until after the completion of training, which is frequently a year and a half in duration. This aspect of Submarine Duty Incentive Pay is designed to augment the other attraction incentives associated with a career in Submarine Service. The relative newness of Submarine Pay while in training coupled with the length of the training pipeline has resulted in little data to properly evaluate its effectiveness. It should be retained during the training period, but evaluated for effectiveness in about 2 years when its impact can properly be measured.

4. The requirement that enlisted personnel incur sufficient obligation to allow assignment to submarine duty upon completion of shore duty is an effective personnel management tool. Implementation of the COPAY enhancements recommended by the QRMC is expected to have a similar effect for officers while satisfying other needs as well.

DepartmentComments

Army

Concurs.

Navy

Concurs.

Air Force

Defers to Navy.

Coast Guard

Concurs.

PHS

Believes findings are
reasonable, but provides
no specific comment.

NOAA

Defers to Navy

JCS

No objection, but
defers to Navy.

37 U.S.C. 305
SPECIAL PAY: WHILE ON DUTY AT CERTAIN PLACES

CERTAIN PLACES PAY
(FOREIGN DUTY PAY)

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SPECIAL PAY WHILE ON DUTY AT CERTAIN PLACES

I. PURPOSE. Special Pay While on Duty at Certain Places (Certain Places Pay or CPP) was initially designed to act as an incentive or additional compensation for duty overseas. However, because the rates have not changed in many years, the purpose of CPP has evolved to that of a token payment for rigorous foreign duty.

II. DATA SOURCES. The majority of data were obtained from the Service staffs of the Army, Navy, Air Force, Marine Corps and Coast Guard. Background information was provided by the State Department and documents originated by The Conference Board Inc., General Research Corporation, the Navy Personnel Research and Development Center, plus selected GAO reports, in addition to other DoD reports and studies.

III. HISTORICAL PERSPECTIVE. Prior to 1963, Special Pay While on Duty at Certain Places existed as Foreign Duty Pay. Although the name has changed, it is still commonly referred to as Foreign Duty Pay. In order to avoid confusion, when referring to the pay as it existed prior to 1963, it will be called Foreign Duty Pay. References to the pay after 1963 will be called as Certain Places Pay or CPP. The current CPP derives from the Career Compensation Act of 1949 (Public Law No. 81-351, 63 Stat. 802). This statutory authority is codified in 37 U.S.C. 305.

The concept of providing additional money to military personnel for performing duty outside the contiguous United States first began during the Spanish American War. Initially, on the basis of the Act of May 26, 1900 (31 Stat. 211), only Army personnel were entitled to an additional stipend for service in Puerto Rico, Cuba, the Philippine Islands, Hawaii, or Alaska. Officers received 10 percent of their basic pay while enlisted personnel received 20 percent. The entitlement's geographic limitations were expanded to anywhere outside the contiguous United States by the Act of March 2, 1901 (31 Stat. 903) and was subsequently provided to all Marine Corps personnel and Navy officers anywhere outside the contiguous United States by the Act of March 3, 1901. The pay remained in this general form for approximately 20 years, to include the World War I era. It was discontinued in 1922 when it was not included in The Joint Services Pay Act of 1922 (Public Law No. 67-235, 42 Stat. 625).

Military service personnel did not receive Foreign Duty Pay again until 1942 when it was authorized by the Act of March 7, 1942 (Public Law No. 77-490, 56 Stat. 148). Beyond the reinstatement of the pay, the most significant fact associated with this Act was that for the first time Navy enlisted personnel were also authorized the pay. At this point, the general orientation of the pay was shifted from solely Foreign Duty Pay, to that of Foreign Duty and Sea Pay. Officers received 10 percent of their basic pay and warrant officers and enlisted personnel received 20 percent. The 1942 Act again made the payment of Foreign Duty Pay a permanent entity. Foreign Duty Pay remained unchanged until enactment of the Career Compensation Act of 1949. Following some, but not all of

the recommendations of the recently completed Advisory Commission on Service Pay (Hook Commission) study, Congress modified Foreign Duty Pay. These changes were:

Elimination of payment to officers and warrant officers. This is consistent with the Hook Commission's rationale:

Officers, especially, do not deserve extra pay for this type of duty, since the pay recommended for them is apportioned to their relative responsibility as executives and administrators, regardless of their site of operation. Additional compensation is unnecessary and undesirable for work which should be expected as a normal incident in a chosen career.¹

Payment of differing amounts of Foreign Duty Pay by pay grade. Congress rejected the contention of the Hook Commission that Foreign Duty/Sea Pay should be provided at the flat rate of \$15.00 per month for all enlisted grades and established rates as follows:

E-1/2	\$8.00	E-5	\$16.00
E-3	\$9.00	E-6	\$20.00
E-4	\$13.00	E-7	\$22.50

Based upon the recommendations of the 1962 Defense Study of Military Compensation (Gorham Report), the Department of Defense in 1963 submitted a legislative proposal recommending elimination of both Foreign Duty and Sea Pay. Instead of paying an individual for foreign duty, DoD recommended that a special pay be provided to personnel whose duty involved unusual hardship. This hardship or isolation pay would be provided to all personnel located at remote or isolated duty stations. Depending on the hardship classification, the additional pay would have been either 15 or 25 percent of basic pay. During House Armed Services Subcommittee hearings on this bill Chairman Rivers commented:

.... Next we come to Section 9 of the bill which repeals authority for special pay for sea and foreign duty. This type of pay is intended to provide a small amount of compensation to the enlisted man who serves at sea, or is stationed overseas...

The proposed legislation seeks to repeal this provision by law and substitute in its place special pay for duty involving unusual hardship...

Frankly, I do not believe we should repeal the present law which provides sea and foreign duty pay for all enlisted personnel. I rather suspect that if we were to adopt the section dealing with unusual hardships that very few people at sea would qualify. I believe that any enlisted man who goes to sea for extended periods of time is entitled to some extra compensation.²

Congress rejected the DoD recommendation but in the Uniformed Services Pay Act of 1963 (Public Law No. 88-132, 77 Stat. 216), made major changes to Foreign Duty Pay. The first was to change the name of the pay to "Special Pay While on Duty at Certain Places." The second change involved determination of eligibility criteria. Prior to 1963, all enlisted personnel serving outside the contiguous United States received Foreign Duty Pay. Congress changed this to allow the Secretary of Defense to determine the locations for which CPP would be paid. However, it also indicated that the Secretary should consider climate, community facilities and accessibility when determining which locations should qualify for the pay. The effect of this law was to provide flexibility to the Secretary of Defense while limiting the number of persons who would receive CPP.

In 1981 Congress questioned the need and effectiveness of CPP and asked DoD to submit a report not later than 1 June 1982.³ By May 1982, DoD had restructured the eligibility criteria so that CPP is paid only where "those remaining locations are considered to be truly arduous assignments."⁴ Climate limitations were tightened and criteria for support facilities were deleted. Although CPP was authorized for members serving unaccompanied tours, it was also given to those serving where the with-dependents tour length is less than the normal 36 months.

Table 1 displays the accumulated costs and number of DoD personnel paid on a yearly basis. Coast Guard personnel are also eligible for the pay; however, complete historical data are not available. Accumulated costs and numbers of Coast Guard personnel paid for 1982 were \$287,448 and 1,611, respectively.

Table 1
Certain Places Pay Receipts and Costs

<u>FY</u>	<u>Total Personnel</u>	<u>Cost (\$000)</u>
1972	386,581	\$66,349
1973	242,295	42,307
1974	203,261	34,912
1975	193,212	33,574
1976	181,155	30,919
1977	154,723	26,408
1978	154,282	25,802
1979	154,245	26,003
1980	153,534	26,126
1981	155,915	26,297
1982	156,856	26,252

Table 2 reflects service projections of the number of personnel anticipated to receive CPP and the associated cost for FY83-FY87. Although there were changes to the eligibility criteria which were effective 1 June 1982, these changes were "grandfathered" for personnel already overseas. Therefore, the changes would not result in cost reductions until those members transferred. However, in Table 2 cost reductions are also not apparent in out-years.

Table 2
Certain Places Pay - Projected Costs
Fiscal Years 1983 - 1987

	<u>FY83</u>		<u>FY84</u>			<u>FY87</u>	
	<u># OF PERSONNEL</u>	<u>COST \$(000)</u>	<u># OF PERSONNEL</u>	<u>COST \$(000)</u>		<u># OF PERSONNEL</u>	<u>COST \$(000)</u>
ARMY	50,019	8,517	48,697	8,313	...	48,697	8,313
NAVY	23,848	4,222	23,472	4,208	...	25,561	4,537
USAF	50,622	8,732	50,915	8,779	...	50,915	8,779
USMC	7,676	1,123	3,423	491	...	3,423	491
DoD							
TOTAL	132,165	22,594	126,507	21,796	...	128,596	22,120
USCG	1,611	287	1,611	287	...	1,611	287
TOTAL	133,776	22,881	128,118	22,083	...	130,207	22,407

A complete chronological listing of legislative history and current authorized locations appear in Appendices A and B.

IV. METHODOLOGY. The primary objective of this analysis is to determine the effectiveness of CPP in recognizing the greater-than-normal rigors of service at specific locations.

The 1962 Defense Study of Military Compensation (DSMC) observed that in considering Foreign Duty Pay:

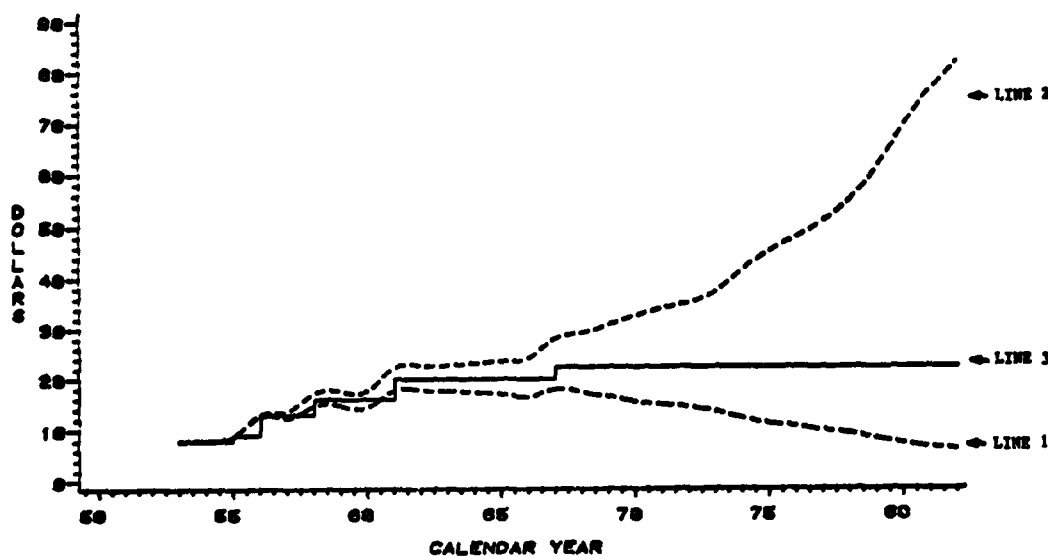
Congress recognized the need for and value of incentive and compensation for service performed outside the Continental U. S.... Since it was difficult to put a price tag on hazards or arduous tasks and the total number of personnel involved included a large quantity of volunteers and conscripts, a "token form" of financial compensation was initially applied on a relatively low scale and evolved ultimately to the present "flat rates" as applied by grade today.⁵

This observation tends to lend credence to the notion that while CCP may initially have been viewed as an incentive or compensation, it was never meant to be more than a token form of incentive or compensation. By virtue of this fact, the effectiveness of CPP is best measured by the real amount or value of the token and how this measure has or has not changed over time.

When established in 1949, Certain Places Pay was nine to ten percent of basic pay. For several years, due to low inflation, the pay held its value. However, the steep inflation of the 1970's significantly diminished the value. Figure 1 provides a display of the declining relative value of CPP for a person enlisting in 1953 and completing a 30-year career this year. It shows that even after applying the five increases between E-1 and E-9, the CPP paid to an E-9 with thirty years service, would have less purchasing power and, therefore, less value than the CPP which that same E-9 might have received as an E-1 thirty years earlier.

Figure 1

CERTAIN PLACES PAY 53 THRU 82 RELATIVE VALUE OVER A 30 YEAR CAREER



Line 1 - value of the pay in 1953 dollars.
 Line 2 - required CPI Adjustments.
 Line 3 - actual number of dollars paid.

On the basis of these data, it can be observed that CPP has declined in value by approximately 80 percent. Today, CPP is one to two percent of basic pay for enlisted personnel. The conclusion which should be drawn from this is that little of the value which initially resided with CPP still remains. Full restoration of that value would require an approximate 400 percent increase in the rates. This would necessitate a similar increase in program costs of at least 70 million dollars per year which is considered prohibitive, especially in light of recent Congressional reductions in funding for this pay.

It is clear that, in its present form, CPP has little or no value as a reward for the greater than normal rigors of service at certain places. We do not, however, suggest eliminating this pay. We believe that, structured and implemented properly, it can be of great use to the Services.

For years personnel managers have wrestled with the problem of manning remote and isolated installations all over the world. This is true for a number of reasons: many stations are located extreme distances from populated areas; the environment is often harsh; travel to and from sites is difficult, etc. Although it may be argued that military members must perform duty at these locations when ordered to do so, the assignment process could be made much simpler and more effective if at least a greater share of individuals performing remote or isolated duty were volunteers. A meaningful reward for isolated duty could provide an incentive for individuals holding skills that are very often associated with remote duty. The result could be a greater percentage of volunteers, bringing with them an improvement in overall morale, possibly better retention, and even a reduction in the number of repeat isolated tours for some whose special skills are required only in specific areas worldwide. If paid at an appropriate rate, it would also reward personnel at selected locations for the discomforts and true isolation associated with such duty.

Other countries have recognized the need to provide a hardship differential for various types of foreign service. This is demonstrated in a recent General Accounting Office report covering the United States and five other countries (Australia, Canada, France, West Germany, United Kingdom) that possess similar national values.⁶ Although their overall compensation systems are not totally akin to ours and the differentials are established for a variety of purposes, they have instituted a requirement for specialized overseas duty, reinforcing the position that compensation is, indeed, appropriate.

Civilian firms have long seen the need for special pay for overseas hardship. An excerpt from a Navy Personnel Research and Development Center (NPRDC) San Diego study demonstrates this:

...private industry has established and maintained its compensation practices for overseas employees based on the inducements necessary to recruit and

retain personnel for extended employment overseas. A principal element of the compensation package offered employees for overseas duty by most companies is an overseas differential pay ... Some companies detail the factors they consider important and weigh them by degree of hardship...⁷

The degree of hardship in specific selected locations is an important factor. A 1982 report by The Conference Board discussing private companies employing U.S. personnel overseas notes:

...69 percent have separate hardship allowances... The reasons companies adopt...a hardship allowance... are directly related to the factors of hardship or difficulty in working and living in a particular foreign location.⁸

Other Federal Government employees also enjoy compensation benefits which are similarly based on a degree of hardship. The NPRDC study states:

A principal element of the compensation package provided federal government employees overseas is the post-differential allowance. The Department of State with numerous personnel assigned around the world, has developed a highly sophisticated procedure...to determine the degree of hardship existing at each post...There are five categories of such post-differential rates... These represent percentages of base pay that will be paid to individuals assigned to specific posts...⁹

As was discussed earlier, DoD recommended elimination of the old Foreign Duty and Sea Pay in 1963 to be replaced by a special pay for personnel assigned to remote or isolated stations. At that time, Congress rejected the idea, placing special emphasis on the need to reward men at sea. This rejection is no longer valid, however, because sea pay has since been treated separately and the rates increased by the Uniformed Services Pay Act of 1981. CPP was not included in this Act, and we believe that the 1963 DoD proposal should be revitalized. Although the DoD made some changes to CPP in 1982, they did not go far enough. Eligibility criteria are still considered to be lenient since they allow individuals serving with dependents on tours less than 36 months to draw the pay and they include locations that are highly questionable in terms of arduous duty, i.e., Singapore, all of Alaska instead of certain areas, all of Thailand instead of certain areas, etc. Greater restrictions are required to make this a really meaningful pay under the arduous duty concept.

A more effective approach for this pay would be to strictly limit its use to only those locations which have truly arduous conditions or

are unusually isolated and to substantially increase the amount paid. The result would be to target a greater amount of money to individuals, but to a significantly smaller number of people.

In limiting the locations to those of truly arduous duty, the following criteria would be required to be fulfilled in order to authorize CPP:

- (1) Accompaniment of dependents is not authorized; and,
- (2) One or more of the following conditions must exist:
 - (a) Complete isolation by normal road or rail travel from populated areas;
 - (b) Seasonal limitations on air or ship travel; or,
 - (c) Extreme weather.

These criteria should be restrictive enough to sufficiently limit the locations while not being so restrictive that truly deserving individuals would be prohibited from receiving the pay. Since these criteria will be much more limiting, it is appropriate that it be paid to all service personnel serving in those locations. Additionally, provisions should be made for a case-by-case waiver of the dependent-restricted criteria by the individual Service Secretaries. This would prevent individuals who are authorized and encouraged to have their families accompany them to otherwise dependent-restricted locations from being excluded from drawing CPP.

There are three possible methods of paying this revised CPP. The first of these would provide the pay to all qualifying personnel using a percentage of basic pay per month. This approach was supported by the Cordiner Committee which said:

In fixing the amount of pay for duty at remote and isolated stations, flat-rates do not appear sound. If such compensation is to be truly effective, it must possess sufficient flexibility to be applicable to all grades and to the degree of hardship currently existing at a particular location.¹⁰

An amount of 15%, which results by averaging the percentage rates of basic pay (10% officer; 20% enlisted) that were provided by the first Foreign Duty Pay of the early 1900's, is believed appropriate for this method. This is also the average of the current five categories used by the State Department in determining their hardship post differentials. Only one category is required because the restructured pay would be limited to only the most arduous or isolated areas. Thus, no graduation in degree of hardship is necessary.

The problem with this method is that it pays all personnel different amounts of money for experiencing the same hardship. On the other hand, it does accommodate the need for greater incentives as people become more experienced and as they attain higher rank.

The second method of payment would be the flat-rate approach. This concept was substantiated by the Hook Commission which stated:

A percentage system permits pyramiding at grades and at salary levels far beyond the inducement required... Moreover, the differential would be exaggerated if basic pay scales were increased... The flat-rate basis was also selected, since the inducement required for each grade is roughly the same regardless of pay within the grade which may vary in accordance with year of service and authorized allowances.¹¹

Using this flat-rate method, persons qualifying for CPP would be paid at the same rate of \$180 per month. This amount was derived by estimating the mean monthly Career Sea Pay entitlement. Sea Pay and Foreign Duty Pay/ CPP have always been closely associated and, although the situations are not completely analogous, sea duty and isolated or hardship duty are somewhat similar. This method recognizes that all persons are undergoing the same hardship and should, therefore, be compensated accordingly.

A third method of payment is a modified flat-rate method. This method provides for an ascendant scale rate of payment tied to pay grade. The amount of money provided for each grade is displayed in Table 3. This method recognizes that all people of similar or equal position undergoing the same hardship should be compensated equally and at the same time accommodates the need for greater incentive as people became more experienced and as they attain higher rank.

Table 3
Modified Flat-Rate Payment Scale

<u>PAY GRADE</u>	<u>MONTHLY RATE</u>
E-1 thru E-3	\$ 25
E-4	50
E-5	60
E-6	125
E-7	135
E-8, E-9	150
W-1 thru W-4	150
O-1E, O-2E	150
O-1, O-2	100
O-3	150
O-4	165
O-5, O-6	180
O-7 and above	0

V. FINDINGS.

A. Special Pay While on Duty at Certain Places is of little value in its present form. The pay should be restricted to only those isolated or remote locations where dependents are not authorized and the environment presents more than normal discomfort with little or no opportunity for travel.

1. The eligibility criteria are too lenient, and the authorized locations are too extensive.

2. The value of the pay has decreased since its inception in 1949 to the point that it is only a small, insignificant token.

B. The pay is needed and should be retained, but it should be properly structured and implemented to provide a more useful tool to assist the Services in manning selected world-wide locations.

1. Both officer and enlisted personnel should draw the pay.

2. The rates should be sufficient to reward those performing duty in remote areas as well as provide an incentive to assist the services in manning isolated stations.

3. The modified flat-rate method is appropriate because it provides the same pay to those experiencing the similar hardship while providing an incentive by establishing a relationship level of with pay grade. The amount should range from \$25 for E-1 - E-3 to \$180 for O-6.

VI. RECOMMENDATIONS.

A. The eligibility criteria for Certain Places Pay should be changed so that only personnel in truly isolated or remote locations where dependents are not authorized and the environment presents more than normal discomforts with little or no opportunity for travel will be authorized to receive the pay. However, provision should be made for the Service Secretaries concerned to waive the dependent-restricted criterion on an individual case-by-case basis.

B. Adopt an ascendant scale rate with the amount ranging from \$25 per month for E-1 thru E-3 to \$180 per month for an O-6 as proposed in Table 3. Enacting legislation should include a "save pay" clause for those individuals under the current CPP system.

C. Delete the prohibition against payment to personnel serving in the United States or its possessions and against payment to members who are residents of the state, possession, or foreign country in which they are serving.

References

1. Career Compensation for the Uniformed Forces, "A Report and Recommendation for the Secretary of Defense by the Advisory Commission on Service Pay," December 1948, pp. 28-29.
2. Hearing before the Committee on Armed Services, United States, House of Representatives on H.R. 3006, to amend Title 37, United States Code, to increase the rates of basic pay for members of the Uniformed Services and for other purposes, February 26, 1963.
3. House Report 97-273, November 17, 1981, to accompany S. 1857 (DoD Appropriation Bill, 1982) pp. 20, and House Report 97-410, Dec 15, 1981, Conference Report to accompany H.R. 4995, pp. 12.
4. OASD (MRA&L) Fact Sheet, May 1982.
5. Defense Study of Military Compensation, Vol II, "Sea and Foreign Duty Pay," July 1962, p. 6.
6. Preliminary Analysis of Military Compensation Systems in the United States and Five Other Countries, report by the United States General Accounting Office, December 1980, pp. 13-62.
7. Certain Places Pay: Current Inconsistencies and Suggested Alternatives, Navy Personnel Research and Development Center, NPRDC TR 82-17, November 1981, p. VII.
8. The Conference Board Report No. 818, 1982, pp. 6-7.
9. Op. cit. NPRDC, p. 7.
10. Defense Study of Military Compensation, (Gorham Report), 1962, Vol II, TAB E, "Extracts of the Cordiner Defense Advisory Committee Report on Technical and Professional Military Compensation (1957)," pp. 34-35.
11. Op. cit., NPRDC, p. 28.

LEGISLATIVE HISTORY OF COMPENSATION FOR SEA AND FOREIGN DUTY

1. Foreign Service Retirement Credit:

- a. 31 Stat. 209, 26 May 1900 stated that in computing service for retirement double time would be given for service between 1898 and 1912 in Puerto Rico, Cuba, and Philippines for enlisted men.
- b. An Act of 2 March 1903 authorized the same provisions for service in China.
- c. An Act of 1904, (33 Stat. 264) made the same provisions for service in China, Cuba, Philippines, Guam, Alaska, and Panama, but excluded Puerto Rico and Hawaii.
- d. An Act of 24 Aug 1912 (37 Stat. 575) discontinued the provision for enlisted foreign duty double time credit toward retirement.

2. Sea and Foreign Duty Pay:

- a. Act of 26 May 1900 (31 Stat. 211) provided only Army personnel with an additional stipend for service in Puerto Rico, Cuba, The Philippine Islands, Hawaii, or Alaska. Officers received 10 percent of base pay and enlisted personnel received 20 percent of base pay.
- b. Act of 2 March 1901 (31 Stat. 903) expanded the entitlement's geographic limitations to anywhere outside the contiguous United States.
- c. Act of 3 March 1901 expanded payment of the entitlement to all Marine Corps personnel and Navy Officers.
- d. Act of 30 June 1902 (32 Stat. 512) provided for an increase in pay of military personnel serving beyond the limits of the United States comprising the Union and Territories of the United States contiguous thereto. The pay proper, as fixed by law for time of peace, increased by ten percent for officers and twenty percent for enlisted personnel from the date of departure from the States to the date of return thereto.
- e. Act of 12 June 1906 (34 Stat. 274) excepted from the appropriation, service in Puerto Rico and the Hawaiian Islands.
- f. Act of 2 March 1907 (34 Stat. 1164) contained a like exception.
- g. Act of 11 May 1908 (35 Stat. 110) provided that increase of pay for foreign service "shall be as now provided by law."

- h. Act of 24 August 1912 (37 Stat. 576) provided that laws allowing increase of pay to officers and enlisted men to foreign service shall not apply to service in the Canal Zone, Panama, Hawaii or Puerto Rico.
- i. The Joint Services Pay Act of June 10, 1922 (42 Stat. 625) repealed, effective 1 July 1922, all existing laws authorizing increase of pay for foreign service.
- j. Act of 7 March 1942 (PL 490-77th Congress) reenacted foreign service pay for officers and enlisted personnel of the Armed Forces. It provided for an increase in base pay of 20 percent for enlisted men, warrant officers, and female nurses; and 10 percent for commissioned officers for any period of service while on sea duty, or duty in any place beyond the continental limits of the United States or in Alaska. It further provided that the increase would be effective from 7 December 1941 until twelve months after the termination of the present war as proclaimed by the President.
- k. Pay Readjustment Act of 1942 (PL 607-77th Congress) approved 16 June 1942 repealed the previous act and reenacted the same benefits for officer and enlisted personnel stationed outside the continental limits of the United States or in Alaska.
- l. Act of 6 October 1945 (PL 190-79th Congress) amended the Pay Readjustment Act of 1942 and provided that the 10 and 20 percent increase in base pay for foreign service would be continued indefinitely.
- m. The Career Compensation Act of 1949 (PL 351-81st Congress) repealed the previous acts pertaining to foreign duty pay for military personnel and reenacted this type of pay for enlisted personnel only. It provided that enlisted personnel while on duty beyond the continental limits of the United States or in Alaska would be entitled to an individual monthly allowance. In 1958 the new grades of E-8 and E-9 were afforded Foreign Duty Pay at the rate of \$22.50 per month by PL 422-85th Congress.
- n. Uniformed Service Pay Act of 1963 (PL 132-88th Congress) restructured the pay. Enlisted members were not automatically authorized foreign duty pay. Secretary of Defense now determined locations which would qualify for the pay.

NOTE: The basis for this chronology is the Defense Study of Military Compensation; Vol II, "Sea and Foreign Duty Pay," July 1962, p. 7. Much of the history has been extracted verbatim from that document, which is commonly called the Gorham Report.

FOREIGN DUTY PAY AREAS
(Effective June 1, 1982)

Alaska
Andros Island (Bahamas)
Antarctica
Antigua Island (West Indies)
Aruba Island (Netherlands Antilles)
Ascension Island (United Kingdom)
Australia:
 Alice Springs
 North West Cape
 Woomera City
Azores Islands
Bahrain Island
Bangladesh
Barbados Island (West Indies)
Bolivia
Brazil:
 Fortaleza
 Recife
 Salvadore
 Santa Cruz
Bulgaria
Burma
Cambodia
Cameroon
Canada:
 Labrador
 Newfoundland
 New Brunswick (St Margarets only)
 Quebec (Senneterre only)
Cape Verde:
 Praia
Central African Republic:
 *Bangui
Ceylon
Chad
China (Peking)
Colombia
Congo
Costa Rica
Crete
Cuba
Cyprus
Czechoslovakia
Diego Garcia Island (Chagos Archipelago)
Djibouti
Dominican Republic
Ecuador
Egypt
Eleuthera Island (Bahamas)

FOREIGN DUTY PAY AREAS (cont'd)

El Salvador
Eniwetok (Marshall Islands)
England:
 Flyingdale Moors
 RAF Spadeadam
 St. Mawgan
Ethiopia
Finland
Gabon Republic:
 Libreville
Germany:
 Kalkar
 Reisenbach
 Todendorf
Ghana
Gibraltar, B.C.C.
Grand Bahama Island, Turks and Caicos (Bahamas)
Greece (except Nea Makri)
Greenland
Guam (Mariana Islands)
Guinea:
 Bissau
 Conarky
Guyana
Haiti
Honduras
Hungary
Iceland
India
Indonesia
Iran
Ireland:
 Londonderry
Israel
Italy:
 Cima Gallina
 Finale Ligure
 Ghedì Torre
 La Maddalena (Sardinia)
 Martina Franca
 Mount Cimone
 Mount Corna
 Mount Paganella
 Mount Venda
 Mount Vergine
 Reggio (Monte Nardello)
 Rimini
 San Vito (Including Brindisi)
 Sciaves
 Sicily (Sigonella)

FOREIGN DUTY PAY AREAS (cont'd)

Ivory Coast

Japan:

Akizuki-Kure Area

Fuji Maneuver Area

Fukuoka

Island of Hokkaido (Chitose)

Kashiwa

Misawa

Ryukyu Islands:

Kuma-Shima only

Seburiyama

Johnston Island

Jordan

Kenya

Korea

Kuwait:

Kuwait City

Kwajalein (Marshall Islands)

Laos

Lebanon

Liberia

Mahe Island (Seychelles Islands)

Malagasy Republic

Malawi

Malaysia Federation

Mali

Malta

Mariana Islands (All areas except Guam and Saipan - see separate listing)

Midway Islands

Morocco

Nicaragua

Niger

Nigeria

Pakistan

Panama

Paraguay

Peru

Philippine Islands

Phoenix Islands

Poland

Ponape (East Carolina Islands)

Puerto Rico:

Vieques Island

Romania

Rwanda:

Kigali

Saipan (Mariana Islands)

Samoa Islands

Sardinia Island:

Decimonannu

Monte Limbara

FOREIGN DUTY PAY AREAS (cont'd)

Saudi Arabia

Scotland:

Holy Loch Area (Including Dunoon, Greenock and Prestwick)

Machrihanish

RAF Mormond Hill

Thurso

Senegal

Singapore

Somali Republic

Spain:

Balearic Islands

Cartagena

Elizondo (Including Gorramendi CMF)

Estaca De Vares

Guardamar del Segura

Moron AB

Sonseca

Sudan

Taiwan

Tanzania:

Dar Es Salaam

Thailand

Togo

Truk Atoll (Caroline Islands)

Tunisia

Turkey

Uganda

Upper Volta

U.S.S.R.

Venezuela

Vietnam

Wake Island

Wales:

Brawdy

Yemen, Arab Republic

Yugoslavia

Zaire:

Kinshasa

Zambia:

Lusaka

Zimbabwe:

Salisbury

NOTE: This revised list is effective June 1, 1982; however those members who were receiving special pay on June 1, 1982 and who were assigned to places no longer qualified for this pay continued to be eligible for such pay until reassigned out of that geographical area.

SUMMARY OF RESPONSES

Certain Places Pay

ISSUES:

1. Special Pay While on Duty at Certain Places is of little value in its present form. The pay should be restricted to only those isolated or remote locations where dependents are not authorized and the environment presents more than normal discomfort with little or no opportunity for travel.

a. The eligibility criteria are too lenient, and the authorized locations are too extensive.

b. The value of the pay has decreased since its inception in 1949 to the point that it is only a small, insignificant token.

2. The pay is needed and should be retained, but it should be properly structured and implemented to provide a more useful tool to assist the Services in manning selected world-wide locations.

a. Both officer and enlisted personnel should draw the pay.

b. The rates should be sufficient to reward those performing duty in remote areas as well as provide an incentive to assist the services in manning isolated stations.

c. The modified flat-rate method is appropriate because it provides the same pay to those experiencing the similar hardship while providing an incentive by establishing a relationship level of with pay grade. The amount should range from \$25 for E-1 - E-3 to \$180 for O-6.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Does not concur. Prefers to maintain CPP in its current form.
Coast Guard	Concurs.
NOAA	Concurs.
PHS	Concurs.
JCS	Does not concur. Believes eligibility criteria too restrictive; too many overseas locations lose recognition.

LEGISLATIVE IMPLICATIONS

1. Amendment of Title 37 U.S.C. 305(a) to provide Certain Places Pay to all personnel at the rate of a maximum \$180 per month.
2. Amendment of Title 37 U.S.C. 305(a) deleting the prohibition against payment of CPP to personnel serving in the United States or its possessions.
3. Amendment of Title 37 U.S.C. 305(b) deleting the prohibition against paying CPP to Servicemembers who are residents of the state, possession or foreign country in which they are serving.
4. Amendment of Title 37 U.S.C. 305(a) to restrict payments to members in locations where dependents are not authorized. Provide a clause for Service Secretary approval of exceptions to the dependents-restricted criterion on a case-by-case basis.
5. A "saved pay" provision should be included for those individuals receiving CCP at the time of enactment of amending legislation.

**37 U.S.C. 427
FAMILY SEPARATION ALLOWANCE**

**FAMILY SEPARATION ALLOWANCE
(TYPE II)**

**PRIMARY ANALYST
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**ALTERNATE ANALYST
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FAMILY SEPARATION ALLOWANCE, TYPE II

I. PURPOSE. Family Separation Allowance, Type II (FSA II) is designed to reimburse, on an average basis, the miscellany of non-quantifiable added expenses that result from family separation.

II. DATA SOURCES. The bulk of data used in this analysis was obtained from the Services in response to 5th QRMC requests. A thorough review of previous compensation studies was made including the Defense Study of Military Compensation (1962), the working papers of the 3rd Quadrennial Review of Military Compensation (1976), the Defense Manpower Commission (1976) and the President's Commission on Military Compensation (1978). Information was also received from the Office of Personnel Management. Although not a primary source of information, interviews addressing FSA II were held at various military installations throughout the country.

III. HISTORICAL PERSPECTIVE. Family Separation Allowance - Type II (FSA II) was authorized by the Uniformed Services Pay Act of 1963 (Public Law 88-132). The Act provided a monthly allowance of \$30 to personnel receiving Basic Allowance for Quarters (BAQ), and serving in pay grades E-5 or above (or E-4 with over 4 years of service), who were separated from their dependents for a period of 30 days or more due to one of the following situations:

- the movement of dependents to the permanent duty station is not authorized and the dependents do not reside at or near the permanent station, or
- for duty aboard a ship away from homeport for 30 continuous days, or
- on temporary duty away from the permanent station for a continuous period of more than 30 days when the dependents do not reside in the area of the temporary duty station.¹

The purpose of this legislation was to provide reimbursement for the necessary added expenses caused by forced family separations.² The Senate, in its report accompanying this legislation stated:

The rationale for the family allowance is that enforced separations of servicemen from their families cause added household expenses where the member is absent for any extended period of time. This results in an inequity as compared to those members whose dependents are authorized to accompany them. The extra expenses include such matters as home and automobile maintenance, increased child care costs, etc.³

The rate of FSA II initially recommended in the House of Representative's bill was \$30 per month, or one-third of the single rate of BAQ authorized for the pay grade of the member, whichever was the larger. However, the Senate Committee on Armed Services favored a flat rate of \$30 per month stating:

The Committee believes that this provision will correct a deficiency in the existing military compensation system which heretofore has not taken into account the additional expenses incurred by the military member because of separation from his family due to military requirements. The flat rate of \$30 would simplify the administration of this provision. The change would affect relatively few members since the great majority of military members could receive only the flat \$30 sum.⁴

The \$30 rate was believed to be a "fair" amount for the allowance, although there was no empirical basis or formula through which this sum was derived.⁵ The allowance was to cover a myriad of non-quantifiable miscellaneous expenses created by the separation such as the additional costs of child care and, particularly, "handyman" jobs that would normally be performed by the absent spouse. Help may be necessary to perform such jobs as home and auto maintenance and repair, minor electrical and plumbing repairs, yard maintenance and shoveling snow.⁶

Since the initial FSA II legislation relied heavily on the "handyman" theory, the Comptroller General decision of February 9, 1968 (B-157486) ruled that, to be eligible for FSA II, a member must maintain a residence or household that was under his management and control and which he would likely share when duty permitted. The effect of this ruling was to deny FSA II to many members whose dependents had elected to move in with relatives or friends for the duration of the extended separation. While members applying for FSA were generally required to certify that they were maintaining a residence for their dependents at a certain address, there was no attempt on the part of the Services to determine if the residence was, in fact, under the member's management and control.⁷

Thus, in 1970, two pieces of legislation affecting FSA II were enacted. One restored FSA II to members denied the allowance by the Comptroller General decision. The second expanded FSA II entitlement to include members whose dependents resided in government quarters.

On December 7, 1970, Public Law 91-529 amended 37 U.S.C. 427(b) to explicitly state that the residence of the dependents need not be under the management and control of the separated member. This change acknowledged that "handyman" type expenses constituted only a portion of the cost of maintaining two households. As expressed in the House report accompanying the bill:

There are, however, many other expenses that are directly attributable to the family separation which are not associated with the upkeep of a house. Some of these come about simply from running what amounts to two households. ⁸

The report cited maintenance of the family automobile, the repair of small appliances and children's bicycles, the duplication of articles of personal necessity (including newspapers and periodicals), child care and postal expenses as items of expense incurred regardless of whether a home is also maintained. ⁹

A second law enacted on December 7, 1970 was Public Law 91-533 which extended entitlement of FSA to members whose dependents resided in Government Quarters. The 1963 Act intentionally excluded this group of members from receiving FSA II and had made the receipt of cash BAQ a prerequisite for drawing FSA II. However, it was then realized that the extra expenses of family separation were in many instances unrelated to base-provided services and housing. Three categories of expenses were cited as contributing to separation costs. Under the "family at home" category, expenses such as routine home and auto maintenance, the repair of household appliances, yard care, extra transportation costs when the spouse does not drive, and baby-sitting fees were cited. The "member overseas" category included duplicatory costs of magazines, books, personal and household type items, laundry and other service charges, and extra food and recreation costs. Under the "family unit as a whole" category, cited was the loss of the enlisted subsistence allowance when the separated member was being subsisted from a government mess and consequent loss of this income which, under normal conditions, would contribute substantially to the family food budget. ¹⁰

No further changes were made to FSA II until 1981 when the Department of Defense Authorization Act (Public Law 96-342) extended FSA II entitlement to personnel in pay grades E-1 through E-4 (under 4 years of service). The additional entitlement came about as a result of efforts on the part of the Department of Defense which believed that the junior enlisted grades were least able to meet the additional costs of maintaining two households. In approving this change, Congress added an additional purpose for FSA II. Concerned with the large number of dependents of junior enlisted personnel overseas, they expressed the hope that payment of this additional allowance might encourage married junior enlisted personnel to serve overseas on unaccompanied tours. ¹¹

IV. METHODOLOGY. Family Separation Allowance (Type II) will be examined from two aspects. First, it will be looked at in terms of suitability, that is: Does FSA II serve a useful purpose in the context of today's military environment? Secondly, the rate will be evaluated for consistency with the purpose of the allowance.

V. ANALYSIS.

1. Purpose. Before examining the purpose which FSA II plays in today's military compensation package, it may be useful to observe some general statistics concerning the allowance. Table 1 shows DoD recipients and costs from FY72 through FY82 with projections of both for FY83 through FY87. Declining figures from FY72 through FY74 reflect the withdrawal from Southeast Asia. Substantial increases from FY80 and FY82 reflect the expansion of FSA II to junior enlisted personnel brought about by the Pay Act of 1981. Projected recipients and costs remain fairly constant through FY87.

Table 1
DoD FSA II Recipients and Costs FY82-FY87*

<u>Fiscal Year</u>	<u>No. Officers</u>	<u>No. Enlisted</u>	<u>Total No.</u>	<u>Cost (\$000)</u>
1972	41,754	129,141	170,895	\$61,522
1973	32,777	100,396	133,173	47,943
1974	20,587	79,021	99,608	36,053
1975	16,407	73,995	90,402	32,546
1976	15,940	62,776	78,716	28,338
1977	13,693	63,188	76,881	27,678
1978	12,458	59,475	71,933	25,895
1979	11,876	60,238	72,114	25,999
1980	11,393	61,184	72,577	26,126
1981	11,549	76,426	87,975	31,671
1982	11,381	89,480	100,861	36,309
1983	11,601	91,538	103,139	37,129
1984	11,620	92,125	103,745	37,349
1985	11,774	94,071	105,845	38,284
1986	11,843	92,782	104,625	37,665
1987	11,874	93,119	104,993	37,798

*Figures represent manyyears of FSA. Figures for FY83-FY87 are budget projections.

FSA II costs and recipients for FY82 were distributed among the four DoD Services as shown in Table 2.

Table 2
FY82 FSA II Costs and Recipients by DoD Service*

<u>Service</u>	<u>No. Officers</u>	<u>No. Enlisted</u>	<u>Total No.</u>	<u>Cost (\$000)</u>
Army	2,919	38,446	41,365	\$14,891
Navy	4,772	29,267	34,039	12,254
Air Force	2,065	14,200	16,265	5,855
Marine Corps	1,625	7,567	9,192	3,309
Total	11,381	89,480	100,861	\$36,309

* Figures represent manyyears of FSA II.

Table 2 shows that the Army and Navy utilize the greatest number of manyyears of FSA II. In addition to the DoD Services, the Public Health Service, Coast Guard, and NOAA also use FSA. The Public Health Service paid \$179 in FSA during FY82 and estimates annual payments of between \$150-400 for FY83 to FY87. Exact figures for Coast Guard and NOAA are unavailable due to non-centrally controlled pay accounts for this item.

However, the Coast Guard estimates that the annual cost of FSA II for FY83-FY87 will approximate \$875,000 and include payments of 550 officer and 1,880 enlisted man-years of FSA II. NOAA has estimated total FSA II payments of \$10,000-\$12,000 for 50-60 eligible sea-going officers per year (FY83-FY87).

As discussed earlier, FSA II is paid to personnel who are serving unaccompanied Permanent Change of Station (PCS) tours, are deployed at sea, or are serving at a temporary duty station away from the area of the permanent duty station. Table 3 shows, for the end of FY82, the percentage of FSA II recipients in each Service who were assigned in each of the three categories.

Table 3
Percentage* of FSA II Recipients by Service
Assigned PCS/TDY/At-Sea
FY82

Category	Army	Navy	Air Force	Marine Corps
PCS	93%	15%	72%	57%
TDY	7%	28%	28%	36%
At Sea	-	57%	-	7%
	100%	100%	100%	100%

*Rounded

Table 3 shows that the greatest proportion of Navy FSA II recipients are assigned to ships away from homeport. For the Army, Air Force, and Marine Corps the bulk of FSA II recipients are serving unaccompanied tours at permanent duty stations. Army PCS recipients are assigned predominantly in Germany and Korea. Likewise, Korea and Germany have the highest concentrations of Air Force PCS FSA II recipients. Marine Corps PCS recipients are assigned primarily in Japan. The large percentage of Marines receiving FSA II in a TDY status results from the routine deployment of infantry battalion and aircraft squadrons on 6 month Western Pacific deployments as a part of the Unit Deployment Program. Overall, about 60% of FSA II recipients were on unaccompanied PCS assignments, 20% were at sea and 20% were on temporary duty during FY82.

As an allowance, FSA II is intended to partially reimburse the member for certain costs associated with family separations over which he has no control. It is an expressed recognition on the part of the Services, as employers, that it is incumbent upon the service member to provide a home for his dependents whether or not he is able to reside with them. Basic Allowance for Quarters (BAQ) recognizes, in its separate rates with and without dependents, that basic additional costs will be incurred by members with dependents. Similarly, FSA II recognizes that additional financial obligations will be created for members ordered to live separately from their families. Although by no means a full or actual cost reimbursement, FSA II, like many other allowances, is an attempt to defray, in part, the expenses incurred by compliance with orders. In

doing so, it may help alleviate, to some degree, the concern and anxiety of separated members attempting to ensure the continued financial well-being of their dependents. The difference created by FSA II may be particularly significant for personnel in the lower pay grades where the ability to meet living expenses may be marginal even with the member at home.

Field interviews with service personnel, conducted as a part of the 5th QRMC review found a common misperception that FSA II is intended to compensate an individual for hardships, either emotional or otherwise, that are created by family separation; or, that FSA II was a payment for being deprived of a normal family life. In actuality, FSA II merely recognizes, and partially reimburses, the cost of family separation. It attempts to provide some equity between those personnel whose dependents are not authorized to accompany them (and thus must maintain two households), and those personnel who are either authorized to have their dependents accompany them or are without dependents. Clearly, those who must maintain two households will incur increased expenses, although the expenses will vary from family to family.

Family Separation Allowance should not be confused with Special and Incentive pays where compensation is offered to attract or retain personnel in areas requiring extensive personal hardship. The special pay in these areas is offered in an attempt to affect the behavior of individuals by offsetting, or compensating for a number of unpleasant or negative factors, only one of which is the emotional hardship and personal sacrifice inherent in family separation. FSA II, on the other hand, provides a reimbursement only for the costs which are incurred as a result of a physical separation.

The legislative history of FSA II cites numerous examples of the types of expenses for which FSA II is intended. Costs fall into additional expenses incurred at home in the member's absence, those incurred by the member himself, and those borne by the family as a whole, such as the loss of enlisted BAS when the member subsists at a government mess, or other forfeitures of economies normally enjoyed by maintaining a single household. While some changes in the structure of military families have probably occurred since 1963, the basic premise of FSA II, that additional expenses are incurred when a member must maintain two households, remains unchanged.

In reviewing the administration of FSA II, an area of possible inequity surfaces involving the situation where service members are married to each other. Under the restrictions in 37 U.S.C. 420, neither member can be considered a dependent of the other for the purpose of receiving FSA II or an increase in any other allowance. Thus, although separated and burdened with the necessity of maintaining dual households, neither member qualifies for FSA II. Even the addition of dependents to the family structure will qualify only the member claiming the dependents, for FSA II. The separation of the member not claiming the dependents would not qualify for the allowance. Since 37 U.S.C. 420 impacts the

payment of many items of compensation to members married to members, including quarters, travel, and transportation allowances, of which FSA II is only a minor part, it is suggested that the issue should be addressed in conjunction with the ongoing Joint Service Study Group on Compensation Policy for Members Married to Members.

A second issue raised by a number of single members during field interviews, particularly those assigned afloat, was a perceived inequity in the compensation received by single and married members. In the shipboard setting, junior single members expressed a dissatisfaction in having to live aboard ship while married counterparts were receiving quarters allowance and could afford to live ashore. The additional entitlement of the married sailor to FSA II during deployments was seen as increasing the disparity between the two groups. However, this aspect of FSA II will remain, as long as our compensation system continues to differentiate between members with and without dependents. Thus, a legislative change entitling single members to FSA II is not appropriate in view of the intended purpose of the allowance.

2. Rate of FSA II.

Given the purpose of FSA II, a determination of an appropriate rate, consistent with the purpose, must also be made. At the time of establishment, \$30 per month or \$1 per day was believed to be a fair rate. This sum had no quantifiable basis but represented a subjective judgment of an equitable reimbursement for non-quantifiable, miscellaneous expenses.

While a notional set of costs exemplifying separation expenses could be constructed, its applicability to the actual costs incurred by a wide variety of FSA II recipients would be questionable. Actual costs will vary widely based upon pay grade, number of dependents, type of quarters or housing occupied, geographical location of the member and a host of other factors. A survey of costs incurred by separated families may also prove difficult to conduct due to inaccuracies in segregating costs of the separation from normally accrued household expenses.

The initial rate proposed for FSA II by the House of Representatives was the greater of \$30 per month or one-third of the monthly without-dependents BAQ rate. Because the one-third BAQ option would have provided an increase for only a small number of members and for ease of administration, the flat \$30 per month rate was finally adopted.¹² Table 4 below shows FSA II rates based upon the one-third BAQ mechanism for selected grades for the years 1963 and 1983. It can be seen that using the one-third BAS rate or \$30 option, most personnel would have opted for the \$30 rate in 1963. Only officers O-2 and above would have received FSA II at a rate greater than \$30 per month.

Table 4
FSA II Rate Comparison
FY68 and FY83 One-Third BAQ (w/o Dependents)

<u>PAY GRADE</u>	<u>1963</u>	<u>1983</u>
O-7	\$53	\$169
O-6	47	152
O-4	40	124
O-3	35	109
O-2	32	95
O-1	28	74
E-9	28	91
E-7	25	71
E-6	23	65
E-4<4	18	55
E-1	18	41

The flat \$30 rate in 1963 fell midway between the one-third BAQ rate for O-1's and O-2's. The corresponding flat rate in 1983, utilizing a similar comparison, would be approximately \$85.

Adjusting the 1963 flat rate of \$30 to FY 1983 dollars (Dec 1982), using the Consumer Price Index (CPI), yields an equivalent sum of \$96. Assuming that \$30 per month represented an appropriate rate for FSA II at the advent of the All Volunteer Force, and again, adjusting the rate to today's dollar, yields \$69 as the equivalent rate (Dec 1972 - Dec 1982).

Because FSA II does not reimburse an expense that can be definitively measured, (e.g., a clothing allowance); because its purpose is not to act as an inducement to affect behavior which may also be measured; and because the allowance does not represent a major portion of the total Service compensation package, frequent changes in the rate have not been mandated. Thus, the FSA II rate has remained unchanged for 20 years while its purchasing power has fallen to less than one-third of the original value. Clearly, an adjustment to the rate is necessary if even a minimal level of reimbursement is to be maintained. From a purely economic standpoint, a rate of approximately \$96 would be required to restore the allowance to its equivalent original value. However, this adjustment assumes a sound empirical base for the original rate which, in fact, was set quite subjectively. Other elements of compensation, notably many in the Special and Incentive Pay area, have rates which are generally sufficient, in terms of recognition and reimbursement, yet are not matched on a one-for-one basis with changes in the economy (i.e., Hostile Fire Pay, Responsibility Pay). While these pays provide a partial compensation or recognition payment, their rates are set based upon other than measurable factors, since setting a quantitatively determined rate is not possible. FSA II falls into this category, although it is an allowance for expenses. Thus, while some evidence exists which argues for an increase in the rate of FSA II to a level three or more times its current rate, such an increase is not justified considering the purpose

of this relatively minor allowance in comparison with other elements of compensation. However, a rate increase to \$60 per month, or \$2 per day, is believed to be a minimum which will provide a meaningful level of reimbursement for family separation expenses.

Forced family separations due to orders tend to be a uniquely military problem. In the public or private civilian sectors, provisions are normally made to have dependents accompany the employee except in the most unusual circumstances. In addition, while Service compensation is fragmented into various pays and allowances, civilian salaries tend to incorporate all aspects of the employment and do not explicitly differentiate the various elements of compensation such as family separation or hazard.

A number of foreign military compensation systems also provide special compensation for family separation. The United Kingdom authorizes a special pay for service members separated from their families by a distance of over 200 miles for over 30 days per year, of between \$2.50 and \$3.30 per day, depending upon location of the member. The Federal Republic of Germany pays a separation allowance to members separated from their place of residence for more than 14 days with rates dependent upon the family situation. Married soldiers also receive travel expenses to visit their families each month. Australian servicemen can receive a family separation allowance for separation over 14 days of roughly \$2 per day. A Field Duty Allowance is paid in France to members assigned to specified deployed units, with rates varying by level of responsibility and family situation. A head of household may receive between about \$6 and \$15 per day, while a single member may receive between approximately \$3 and \$7.12

VI. FINDINGS.

A. FSA II fulfills a useful purpose in the Service Compensation package and should be continued.

B. FSA II should continue to reimburse in part those miscellaneous and non-quantifiable expenses created by family separation.

C. An increase in the FSA II rate to \$60 per month is believed appropriate.

1. Cost projections for FY84 through FY87 utilizing the \$60 per month rate are shown below:

<u>Fiscal Year</u>	<u>Cost (\$000)</u>
1984	74,698
1985	76,568
1986	75,330
1987	75,596

V. RECOMMENDATIONS.

- A. Retain FSA II in its current form.
- B. Raise the FSA II rate to \$60 monthly.

References

1. Public Law 88-132, 88th Congress, 1st Session, October 2, 1963.
2. House of Representatives Report No. 88-208, to accompany H.R. 5555, 88th Congress, 1st Session, 11 April, 1963, p. 28.
3. Senate Report No. 387 to accompany H.R. 5555, 88th Congress, 1st Session, August 5, 1963, p. 25.
4. Ibid., p. 47
5. Statement by Norman S. Paul, Assistant Secretary of Defense (Manpower) before a Subcommittee of the Committee on Armed Services, U.S. Senate, 88th Congress, 1st Session, July 16, 1963, p. 30.
6. House of Representatives Report No. 88-208, p. 29.
7. House of Representatives Report No. 91-662 to accompany H.R. 110, 91st Congress, 1st Session, 20 November 1969, p. 3.
8. Ibid., p. 3.
9. Ibid., p. 3.
10. House of Representatives Report No. 91-663 to accompany H.R. 386, 91st Congress, 1st Session, November 20, 1969, p. 2.
11. Conference Report No. 96-1222 accompanying H.R. 6974, August 18, 1980, p. 133.
12. Senate Report No. 387, p. 25.
13. Report by the General Accounting Office "Preliminary Analysis of Military Compensation Systems in the United States and Five Other Countries", December 31, 1980.

SUMMARY OF RESPONSES

Family Separation Allowance (Type II)

Issue:

1. Retain FSA II in its current form.
2. Raise FSA II monthly rate to \$60.

Department

Comments

Army

Concurs.

Navy

Concurs. Except
desires \$96/month.

Air Force

Concurs.

Coast Guard

Concurs.

Public Health Service

Concurs.

NOAA

Concurs.

Joint Chiefs of Staff

Concurs.

LEGISLATIVE IMPLICATIONS

Family Separation Allowance (Type II)

Amend 37 U.S.C. 427(b) to increase the allowance to \$60 per month.

37 U.S.C. 310
SPECIAL PAY: DUTY SUBJECT TO HOSTILE FIRE

HOSTILE FIRE PAY

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HOSTILE FIRE PAY

I. PURPOSE. Hostile Fire Pay (HFP) is unique. It is not designed to compensate for the hazards of, or act as an incentive for participation in armed conflict. The purpose of HFP is to provide an additional payment during periods of nominal peace, as a token of recognition, to personnel serving in a hostile fire area, and to personnel of a vessel, aircraft, or unit that engages in hostile action, outside of a designated hostile fire area. Therefore, HFP was studied to determine the appropriateness of the pay and the degree to which it fulfills its stated role.

II. DATA SOURCES. The majority of data was obtained from the Service staffs of the Army, Navy, Air Force, Marine Corps and Coast Guard. Background information was provided by the State Department, International Association of Chiefs of Police, Maritime Administration and selected GAO reports in addition to other DoD reports and studies.

III. HISTORICAL PERSPECTIVE. The current statutory authority for HFP is derived from 37 U.S.C. 310 (1976) which was added by Section 9 of the Uniformed Services Pay Act of 1963. The concept of a token of additional compensation for personnel involved in combat originated during WWII with the inception of Combat Badge Pay and Expert Medical Badge Pay. As the name would suggest, these pays were limited to infantrymen and medical personnel who had actually served in combat. The authority to award this "combat pay" began in January of 1944 and remained in effect until October of 1949, when it was repealed in conjunction with the enactment of the Career Compensation Act. This was based upon Hook Commission recommendations.

When the Korean War broke out there was no Combat or Hostile Fire Pay apparatus in place. The Army took the lead in requesting of Congress a new Combat Duty Pay for servicemen serving in Korea. It should be noted at this point that there was a subtle difference in reasoning between the Combat Pay of WWII and that of Korea. Combat Pay during WWII was justified on the grounds that the individuals who were experiencing the most arduous and dangerous aspects of combat should receive a special monetary token for their exposure. The justification for Combat Duty Pay during the Korean War rested more on the fact that it appeared to be inequitable to pay individuals hazardous duty pay for noncombative undertakings and not compensate individuals for the extremely hazardous duty of engaging in combat with the enemy. On 10 July 1952, two years after the initial proposal, the Combat Duty Act of 1952 was enacted. All personnel who qualified under this Act received the standard amount of \$45.00 per month. The Combat Duty Pay of 1952 differed from that of WWII in that it was available to all servicemen (except those already receiving a hazardous duty pay) who engaged in combat for a total of six days in a given month. Because of the restrictive language of the act and the six-day combat requirement, the bulk of the Navy and Air Force were excluded while the ground combat elements of the Army and Marine Corps received the lion's share of Combat Duty Pay. In 1953 an attempt

was made to have Congress authorize payment of Combat Duty Pay by zone or area to eliminate this inequity. The amendment failed to pass Congress. With the cessation of the Korean War, little or no additional interest was shown in combat duty pay until the beginning of the Vietnam conflict, when the DOD submitted HFP legislation based on the recommendations of the Gorham committee.

On 2 October 1963, Public Law 88-132 (77 Stat. 216) was enacted. This law is the basis upon which HFP is currently administered. It established the HFP rate at \$55.00 per month which, at that time, equaled the lowest amount paid for hazardous duty and incentive pays. Both officers and enlisted members received the same amount and the receipt of a hazardous duty or incentive pay did not preclude an individual from receiving HFP. Hostile Fire Pay was not available to service members missing in action or captured and could not be paid when Congress had declared war.

In 1965, Public Law 88-132 was amended to increase HFP to \$65.00. The basic HFP law was very broad in nature and left the determination of eligibility criterion to the Secretary of Defense. The administration of HFP has evolved into several general rules. A service member is entitled to HFP if he fulfills one of the following conditions:

- Is permanently assigned to a designated hostile fire area.
- Performs assigned duties connected with military operations in a designated hostile fire area for a minimum of six days in a given month.
- Is not in a designated hostile fire area but is a member of a group (ship, infantry squad, or airplane) that becomes subject to a hostile act.

Table 1
Number of Personnel Receiving Hostile Fire Pay
and Associated Costs

<u>Calendar Year</u>	<u>Total Personnel</u>	<u>Cost (\$000)</u>
1968	1,284,747	495,021
1969	1,231,150	466,186
1970	1,001,358	388,605
1971	567,710	236,657
1972	356,800	112,917
1973	168,222	32,021
1974	4,612	1,734
1975	8,733	1,675
1976	881	135
1977	750	559
1978	648	393
1979	1,012	233
1980	78	28
1981	167	49
1982	157	46

IV. METHODOLOGY. Because HFP was not designed as an incentive, but rather as a token of recognition, it dictates that the evaluation take a subjective approach. Questions pertaining to appropriate pay levels and program changes to HFP were posed in the data requests submitted to each Service. Their responses covered a broad spectrum of alternatives and pay ranges. Based upon these responses and the overall nonanalytical conditions of this pay, the review was structured to consider the following: (1) Eliminate hostile fire pay, (2) Retain in its present form, and (3) Retain in a modified form.

A. ARGUMENTS IN FAVOR OF ELIMINATING HOSTILE FIRE PAY.

The crux of any discussion on the merits or appropriateness of Hostile Fire Pay is that while combat may be the "worst hazard of all", when it is performed in the service or defense of one's country it is also the "highest honor and most solemn duty." Thus, to pay an individual extra money in appreciation for performing the job which he, upon volunteering, should have recognized as his basic or ultimate function is totally inappropriate. Moreover, no study or individual has ever produced any empirical evidence or irrefutable testimony that Hostile Fire Pay has a positive effect on morale or the combat effectiveness of any service member.

Few, if any, foreign countries approach recognition of combat duty in a manner similar to that of the United States. In fact, recently when the Government Accounting Office surveyed the five countries of Australia, Canada, the United Kingdom, France, and West Germany, (countries that have strong cultural and ethnic ties to our own), it found that only one, the United Kingdom, paid a stipend called Northern Ireland Pay, even here the similarity to HFP is severely limited.¹

The State Department provides its employees with a 25 percent base pay supplement in the form of Danger Pay. The Merchant Marine have also received bonuses in amounts as great as 100% of base pay. In both instances, the recipients were compensated for performance of dangerous duties during periods of armed conflict. It is here, however, that the similarity to the Armed Forces ends. Unlike the Armed Forces neither of these organizations has as its ultimate purpose the task of engaging an enemy in armed conflict. This extra payment to civilian employees is clearly designed as an incentive to undertake more dangerous duty. HFP has never been considered an incentive. There can be no real monetary incentive for engaging in combat. Hence, to that there is conclude a true likeness between the payment of HFP and Danger Pay is completely erroneous.

Civilian police departments often engage in armed combat and their structure closely approximates the Armed Forces. These organizations, by virtue of the periodic combative nature of their missions and paramilitary orientation, are more similar to the Armed Forces than either the State Department or the Merchant Marine.

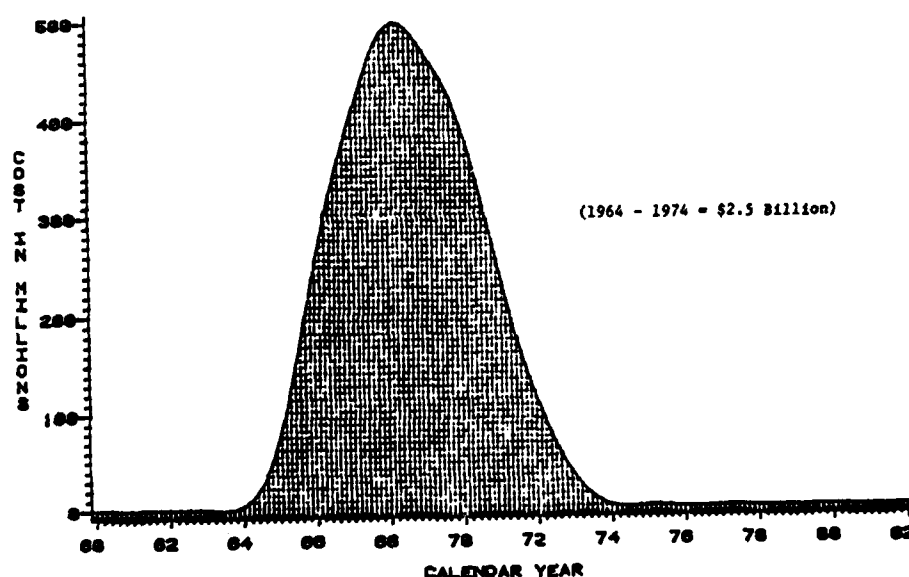
Information received from the International Association of Police Chiefs indicates that policemen are not paid bonuses or anything resembling HFP when they encounter combative situations.

To tie HFP to hazardous duty pay in terms of rates or type of duty performance is an ill-conceived approach, since hazardous pays are targeted to specific skills and are intended to compensate for risks over and above normal duties involved in a military organization.

As for the "nominal" expression of gratitude, HFP, when authorized during periods of conflict involving significant numbers of personnel, can be expensive. Today only a handful of people are drawing HFP, but in 1968, there were 1,284,747 drawing it in Vietnam for a total of \$495,021,000. Over the 10 year period which encompassed the bulk of the Vietnam conflict, HFP cost \$2.5 billion.

Figure 1

COST OF HOSTILE FIRE PAY 1963 THRU 1982



B. ARGUMENTS IN FAVOR OF RETAINING PAY IN ITS PRESENT FORM.

Hostile Fire Pay has been paid in some form to members of the Armed Forces since 1944. Thus, it exists not only as a special pay, but also as a historical precedent set by Congress to provide a token of recognition to personnel engaged in hostile fire action during periods

of nominal peace. It also applies during periods of prolonged police or military assistance actions which are, in fact, war in every sense except for the legal and formal declaration. The following excerpt from the 1963 House debates considering the subject of Combat Pay highlights the intention of Congress.

Combat Pay is not incentive pay in any sense of the word. Rather it is a small gesture, but a gesture still, on the part of this Congress and the people we represent to our servicemen who are fighting and dying in the cold war. It is a small but I hope significant expression of the deep gratitude every American feels for the sacrifices and dedication of these few men.²

This position endorses the belief that participation in direct combat is the "worst hazard of all," and therefore such service deserves at least the same (or greater) recognition as individuals eligible for the various hazardous duty pays. This was recognized to some degree by Congress in 1963 when they set HFP at \$55.00, a rate which was consistent with the Hazardous Duty Incentive Pays at that time.

The intent of Congress, that this token of recognition should continue to be paid, has been supported by the passage of the public laws in 1952, 1963 and 1965. Additionally, in the aftermath of the January 1968 capture of the USS Pueblo³ crew and the 1981 return of the hostages from Iran,⁴ Hostile Fire Pay was authorized retroactively for the entire period of captivity for these personnel. Previous Presidential commissions have also stated that this pay should be continued. The most recent of these efforts, concurrent with the establishment of the all-volunteer force, were the 1970 Gates Commission⁵ and the 1971 (2nd) Quadrennial Review of Military Compensation.⁶

Previous studies have indicated that the receipt of Hostile Fire Pay by the soldier, sailor, airman or marine in the front line has a positive effect on morale, because it reminds the individual that his country truly recognizes the sacrifice he is making especially of the exposure to combat conditions and the routine discomfort of living in a combat environment.⁷ Additionally, it should be noted that the country which is most similar to ours in national values, Great Britain, does pay a type of hostile fire pay for the arduous duty in Northern Ireland.⁸

In considering the justification for Hostile Fire Pay, an important issue to address is that of the draftee force versus the all-volunteer force. From its inception as combat pay through the development of the present day hostile fire pay system, the Armed Forces' basic manpower needs were provided in large part by the draft. It may be that Hostile Fire Pay was designed for those citizens who found themselves performing a patriotic duty involuntarily. However, a large proportion of those participating in this country's conflicts were volunteers who understood fully what they were volunteering for but who were also exposed to the same dangers and experienced the same discomforts.

In the past some arguments have been raised that with the improved compensation levels of the all-volunteer force personnel do not need the money provided by HFP. However, this pay was never intended as pure compensation.

Acknowledgement of the need for a special monetary reward is evidenced by the fact that other organizations have maintained similar programs. State Department employees assigned to designated hostile environments receive special compensation far exceeding that of the military member, i.e., 25% of base salary. The members of the Merchant Marine are also compensated for performing duty in waters declared dangerous by the U.S. Navy.

C. ARGUMENTS FOR MODIFYING HOSTILE FIRE PAY.

If Hostile Fire Pay is retained, there are three issues which require resolution. These are: (1) the name itself, (2) the eligibility criteria, and (3) the level of payment.

1. Name Change. Discussions with representatives from the Joint Chiefs of Staff and OSD Legislative Affairs have revealed a particular concern about the name "Hostile Fire Pay". It relates to the word "hostilities" referenced in the International Security and Development Cooperation Act of 1981 and the War Powers Act of 1973. In essence, the situation occurs when the Department of Defense authorizes certain servicemen HFP while the level of activity in the area is not "hostile" enough to warrant reports to Congress required by the aforementioned Acts. Both agencies concerned with this matter believe that as long as the name contains the word "hostile", which they assert carries the connotes of a situation greater in significance than is really intended, the utilization of HFP in certain instances will continue to be a problem. The expressed concern has merit. The words "hostile fire", could indeed easily misrepresent a situation far greater than exists and, therefore, could become somewhat misleading possess intimate knowledge of the actual conditions. To overcome this problem, there are any number of names that may be appropriate, i.e., Dangerous Duty Pay, Adverse Duty Pay, Pay for Those Subject to Danger, Pay for Those Subject to Dangerous Fire, Risk Pay, or Danger Pay. In the selection of a name, it is important that it adequately describe a reasonable degree of risk but does not connote the impression of war.

2. Eligibility Criteria. To insure the pay goes to the right people, as described earlier, HFP eligibility has gone from one extreme to another. During WWII Badge Pay was limited to infantrymen and medics. Later, in Korea, the combat-unit concept was adopted, and by the end of the Vietnam Conflict an area designation further extended entitlement, even including those within the area who were in little or no danger. The current provisions set forward in 37 U.S.C. 310 and DoD directives indicate that the servicemember is eligible for HFP, except in time of war declared by Congress, if:

- a. subjected to hostile fire or explosion of hostile mines;
- b. on duty in an area in imminent danger of being exposed to hostile fire or explosion of hostile mines and in which, during that period, other members of the Uniformed Services were subject to hostile fire or explosion of hostile mines;
- c. killed, injured, or wounded by hostile fire, explosion of a hostile mine, or any other hostile action;
- d. assigned to duty for military operation in a hostile fire area for a minimum of six days in a given month; or
- e. exposed to a hostile act outside a designated hostile fire area (commander certification is required).

The most common criticism about eligibility arises when paying HFP under subparagraph 2.b. above. It is primarily from this provision that the Secretary of Defense exercises his authority to designate a Hostile Fire Zone (HFZ). Once this is defined, the pay is administered indiscriminately to all assigned to that zone. In the case of Vietnam, this meant that all persons assigned to and working within the boundaries of the zone which included all of Vietnam and its surrounding waters received HFP. Although designating a zone eases the administration of the pay, e.g., no Commander's certification is needed, it can also be extremely costly and becomes a matter of equity between those "in the heat of battle" and those with little or no exposure to it.

Provisions of the pay during the Korean Conflict were probably too restrictive. Under the criteria of the Combat Duty Pay Act of 1952, an individual had to be assigned and present with a designated combat unit for six days in a given month. Exceptions to the six-day rule were those killed, wounded, captured, injured, or missing. There were no provisions for others who experienced various types of hostile acts. Hence, individuals in these categories received no "token of recognition".

These two recent historical experiences, Vietnam and Korea, point up the fact that eligibility criteria must account for all reasonably dangerous situations to assure that the pay goes to those who are most deserving.

Based on the Service and JCS staff responses in addition to our own review, a series of alternative criteria have been constructed which vary the definition of the HFP area, the level and duration of exposure, and how to handle personnel outside the area. Briefly, the five alternatives are defined as follows:

1. Limited Designated Area Approach:
 - designates areas independently or in conjunction with Department of State
 - requires 6 days in area in given month
 - includes individuals fired upon outside designated area
 - sets rate equal to lowest Hazardous Duty Incentive Pay rate for all
2. High/Low Risk Area Approach:
 - designates high- and/or low-risk areas
 - requires 6 days in area in given month
 - includes individuals fired upon outside designated area
 - sets low-risk area rate equal to lowest Hazardous Duty Incentive Pay rate and high-risk area rate 1-1/2 times low-risk area rate
3. Modified High/Low Risk Area Approach:
 - designates high- and/or low-risk areas
 - requires 6 days in low-risk area or 1 day in a high-risk area in given month
 - includes individuals fired upon outside designated area
 - sets low-risk area rate equal to lowest Hazardous Duty Incentive Pay rate and high-risk area rate 1-1/2 times low-risk area rate
4. Restricted High/Low Risk Area Approach:
 - designates high- and/or low-risk areas
 - requires 6 days in area in given month
 - excludes those out of designated area
 - sets low-risk area rate equal to lowest Hazardous Duty Incentive Pay rate and high-risk area rate 1-1/2 times low risk area rate
5. Limited High/Low Risk Area Approach:
 - designates high- and/or low-risk areas
 - requires 6 days in low-risk area or 1 day in high-risk area in given month
 - excludes individuals outside designated area
 - sets low-risk area rate equal to lowest Hazardous Duty Incentive Pay rate and high-risk area rate 1-1/2 times low risk area rate

A more detailed version of the criteria for each alternative may be found at Attachment 1.

The first alternative accounts for all people with any conceivable possibility of exposure to danger, including those with the least chance who are completely outside a designated danger area. At the same time, it does have a limiting effect of the designated danger area itself and it complies with the original intent of Congress to reward those who are subject to danger over an extended period by requiring six days in the area for eligibility. It also accommodates both major and minor conflicts. On the other hand, this option does not recognize differences in level of risk, i.e., the rate is the same for all, and, therefore, could be considered inequitable. It has the potential for becoming too lenient unless the concept of limiting the designated area is strictly enforced. It could also become very costly if not properly controlled and could risk criticism as "more than a token," considering total HFP expenditures. The administration of this option would be simple and straight forward. Overall, it represents an improvement over previous experiences.

The second alternative contains many of the same provisions as the first. It accommodates all those with any possibility of exposure to danger, including those with the least; the six-day rule still applies, but it has the same potential for being too lenient and somewhat costly; and the administrative issues are unchanged. However, it does differentiate between high- and low-risk areas and, therefore, offers a more equitable approach in terms of rates and a recognition of truly arduous combat duty. Once again, it improves upon previous systems but still carries with it certain shortcomings.

The provisions of the third alternative are identical to those of the second and, therefore, contain the same good and bad points, with one exception. The six-day rule applies only in the low-risk area; hence, this alternative recognizes more clearly the significantly greater exposure to danger in the high-risk area by requiring only one day in a given month for eligibility for the higher rate.

Alternative 4 accounts for all people with any real possibility of exposure to danger, omitting those completely outside either a low- or high-risk designated area. It, therefore, eliminates the need for certification and is, therefore, somewhat less difficult to administer and less costly. It also recognizes truly arduous duty as a two-tiered system and is politically acceptable because the low/high-risk areas can be designated concurrently or individually. It does, however, provide a more restrictive approach, since the original intent of Congress to account for extended periods of exposure is retained with the six-day requirement in both high- and low-risk areas.

The final alternative contains the same provisions of Alternative 4 except for the six-day rule in the high-risk area. It attempts to recognize the original intent of Congress, in all areas, but takes a more contemporary approach in terms of accommodating to both general war and the more limited types of conflicts in which the country has been involved recently. Accordingly, it is more restrictive than Vietnam,

but less restrictive than Korea. Although it fulfills the original intent of Congress by the six-day rule in the low-risk area, it takes a more realistic approach by requiring only one day in the high-risk area where the danger is substantially greater. It is easier to administer than alternatives 2 or 3, but it could be slightly costlier than alternative 4.

3. Level of Payment. The final issue deals with the proper level of HFP payment. It is important, when setting the level, that the rates are appropriate but not excessive, risk becoming more than a token. For example, the ratio of HFP to basic pay has diminished substantially from 1965 to 1982, i.e., about 70% (Table 2). Hence its value, even as a token, might be questionable. On the other hand, comparing the total amount paid during the Korean Conflict (about 20% in Korea received HFP)⁹ when the eligibility criteria were more tightly controlled, with the Vietnam era when unit restrictions were lifted, the difference in the amount can be quite significant.

Table 2
Percentage of HFP to Base Pay (1965 and 1982)

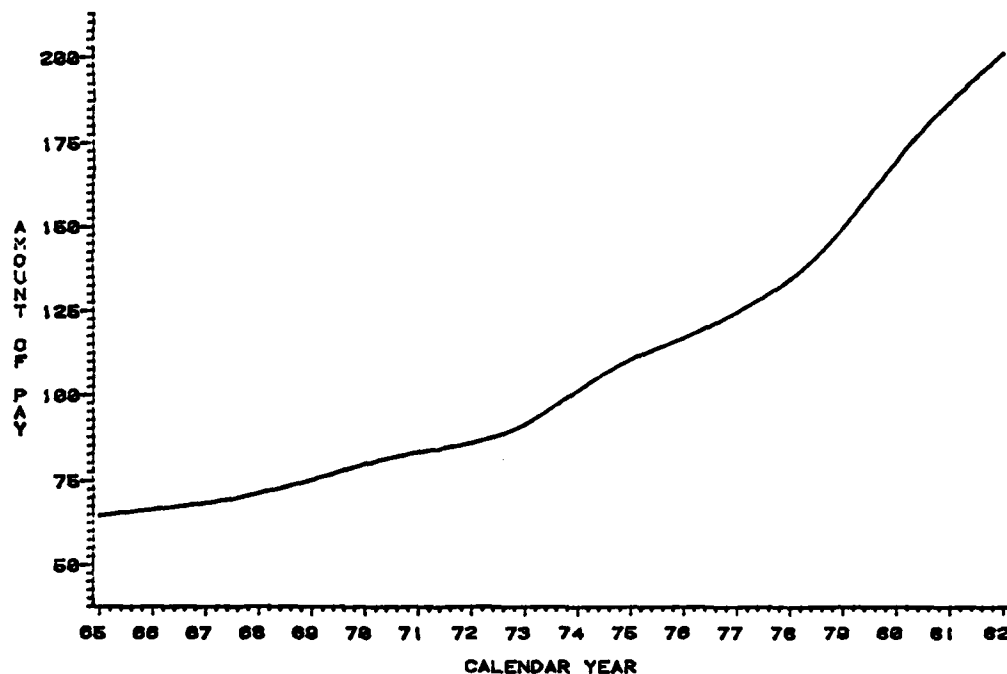
GRADE	<u>1965</u>		<u>1982</u>	
	<u>BP</u>	<u>HFP %</u>	<u>BP</u>	<u>HFP %</u>
O-6	1153	5.6	3690	1.7
O-5	900	7.2	3063	2.1
O-4	738	8.8	2546	2.6
O-3	593	10.9	2084	3.1
O-2	428	15.1	1660	3.9
O-1	309	21.0	1143	5.7
W-4	714	9.0	2169	2.9
W-3	517	11.3	1808	3.5
W-2	476	13.6	1313	4.9
W-1	371	17.4	1218	5.3
E-7	419	15.4	1385	4.6
E-6	350	18.5	1143	5.7
E-5	266	24.4	1904	6.4
E-4	192	33.7	854	7.6
E-3	129	50.3	733	8.8
E-2	99	65.3	642	10.1
E-1	90	71.6	573	11.3

Services observations regarding the HFP rate, which is currently set at \$65, were as follows:

a. Army. The Army indicated that there is no particular rationale for changing the rate, but that they recognized the effects of inflation on HFP. Although the Army did not specifically propose a rate considering an inflation factor, we chose to investigate the possibilities by looking at a CPI adjustment over time since 1965, when the present rate was set.

Figure 2

HOSTILE FIRE PAY REQUIRED CPI ADJUSTMENT OVER TIME



Our computations indicate that an increase to approximately \$200 would be required to achieve parity with the pay in 1965.

<u>YEAR</u>	<u>CPI</u>	<u>YEAR</u>	<u>CPI</u>
65	65.001	74	101.555
66	66.871	75	110.787
67	68.743	76	117.150
68	71.612	77	124.760
69	75.480	78	134.242
70	79.971	79	149.463
71	83.340	80	169.674
72	86.085	81	187.265
73	91.449	82	201.114

b. Marine Corps. The Marine Corps has indicated a desire to see HFP authorized in the same manner as Danger Pay, which is paid by the Department of State to its employees at a rate of 25 percent of base pay. If HFP was to be paid similar to Danger Pay, two benefits would ensue. The first of these would be indexing HFP to base pay and, therefore, would avoid its diminishing in value. Second, a meaningful token of recognition would be those who are subject to danger over an extended period by requiring six instituted and more readily maintained. On the other hand, HFP would be previously opposed paying HFP by rank because, this would tend to indicate that some individuals are more valuable than others.¹⁰ The present HFP provides the same amount to all service members and is based on the premise that all persons should receive the same amount of token recognition. The only mechanism which can trigger Danger Pay is the determination that a country or locality is not safe and that an evacuation of employee dependents is required. When considered in conjunction with the rules governing HFP, an incongruent situation could easily arise. A Marine guard at an embassy where dependents have been evacuated would not necessarily be authorized HFP, while State Department employees would receive the 25 percent differential. Conversely, a Marine who is fired upon while guarding an embassy that still authorizes employee dependents, could receive HFP for the month in which the State Department employee would not. This situation could be remedied by changing the rules of HFP so that it is always paid to servicemen when the State Department employees are authorized Danger Pay.

c. Navy. The Navy's approach would be to increase the monthly HFP stipend to \$83.00. This would raise HFP to a level equal to that of the least amount of Hazardous Duty Pay, a method used once before in 1963. By doing this, HFP would be raised to a more meaningful level of compensation. However, given the likelihood of basic pay and possibly even Hazardous Duty Incentive Pay to increase, there is no assurance that this level would be maintained.

d. Air Force. The Air Force has suggested that HFP remain unchanged. This obviously would not increase costs. By the same token it would do nothing to repair any damage that may have been done to diminish the value of the pay.

The second QRM concluded that ... "When the rate was established in 1963 it was determined that Hostile Fire Pay should be at least equal to the lowest rate of other incentive pays for hazardous duty. In 1965 the relationship was changed to 20% above the lowest rate of incentive pay for hazardous duty. This relationship is appropriate. When the rate of incentive pay for hazardous duty is increased in the future, Hostile Fire Pay should be increased accordingly."¹¹ Using this rationale in conjunction with current hazardous duty rates, HFP should be paid at about \$100 per month. This proposal would increase the amount paid, but would not protect that value against future increases in base pay or the effects of inflation. Costs would increase by approximately 50%.

There are, of course, numerous other methods that can be explored. For example, it has been shown that those actually bearing the greatest burden of exposure to hostile actions are the lower grade personnel, i.e., E-1 to E-3.¹² Hence, deriving an amount as a percentage of a lower grade member's basic pay would be meaningful. Under this concept, the rate might be equal to 15% of an E-3's base pay. Using the 1982 base pay rate, HFP would amount to approximately \$115.00 per month. This kind of approach would pay all persons the same amount and, because it is computed from base pay, it would hold its value in the future.

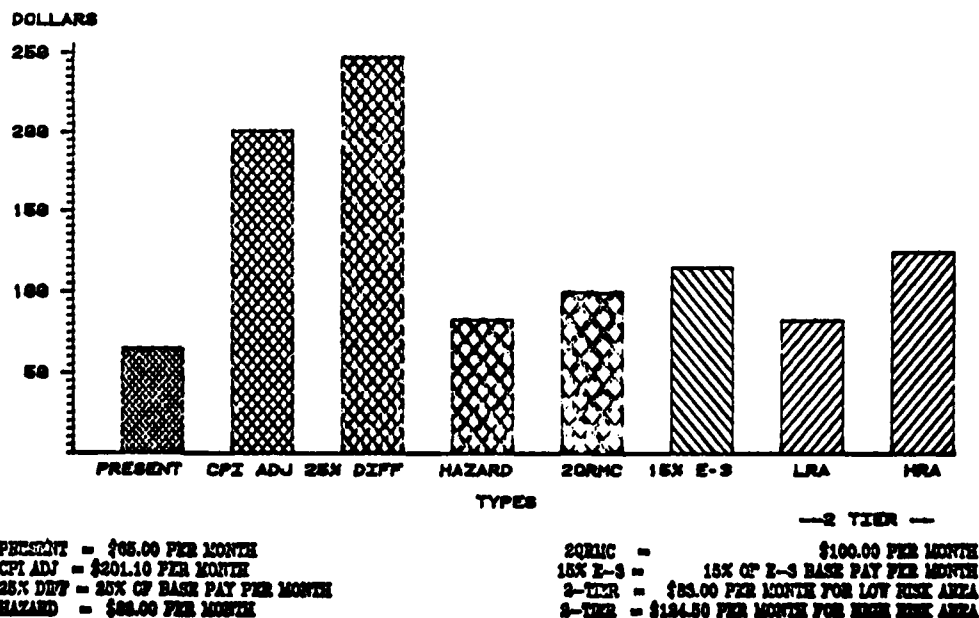
Finally, it should be noted that Congress, in addition to previous commissions studying compensation, have indicated a desire to relate HFP rates to those of the lowest hazardous duty pays, believing that duties such as parachuting from a plane or disarming a bomb are no more dangerous than "putting one's life on the line." In addition, it is also felt that those taking the "brunt of the action" deserve something greater than those in the rear areas. Hence, a two-tiered rate system related to the lowest hazardous duty pay is believed to be a logical and fair approach while staying within the original intent of "token recognition."

Figure 3 provides a visual display of the aforementioned proposals.

Figure 3

POSSIBLE TYPES OF HFP

PROPORTIONATE AMOUNT OF MONEY PAID



V. OTHER OBSERVATIONS. During the course of the analysis it became clear that there is a limited amount of guidance in the field regarding the payment of Hostile Fire Pay. Although some Service directives exist, the Services and JCS consistently commented on the need to improve and tighten procedures. The DOD directive on this pay contains reporting requirements only; procedures for the administration of the pay are not even addressed.

VI. FINDINGS.

A. Hostile Fire Pay should be retained, but modified to improve upon the current and previous systems.

B. Alternative #1 should be adopted because:

1. it fulfills the intent of Congress by providing a "token of recognition;"

2. it strengthens the eligibility criteria so that individuals regularly receiving it must be directly engaged with the enemy on a continuing basis;

3. it provides for a closer working relationship with the Department of State in its administration;

4. it is easier to administer than other alternatives because it keeps the pay simple and straightforward;

5. it is reasonable in terms of total cost, provided the eligibility criteria are strictly enforced; and

6. the amount of payment maintains a constant relationship with hazardous duty pays.

C. A name change to better describe the pay is appropriate--preferably "Danger Pay." This name is compatible with that used by the Dept. of State and, therefore, provides for consistency within government agencies and recognizes the political acceptability that the Dept. of State pay has enjoyed over the years.

D. A comprehensive DoD directive should be developed to provide general guidance and procedures for:

1. responsibilities at all levels of the command structure;

2. area designation by the Secretary of Defense either independently or in association with the Department of State; and

3. certification when an individual is subjected to a hostile act outside a designated danger area.

VII. RECOMMENDATIONS.

On July 21, 1983, in an action independent of and subsequent to the completion of this analysis, the House passed an amendment to Title 37 that, among other things, changed the name of this pay to "Special Pay: duty subject to hostile fire or imment danger." While the amendment bears some relationship to selected recommendations herein, it does not abrogate the study.

A. Retain Hostile Fire Pay.

B. Adopt the eligibility criteria contained in Alternative 1.

C. Change the name to "Danger Pay."

D. Set the rate of payment equal to the lowest Hazardous Duty Incentive Pay at the time.

E. Develop a comprehensive DoD directive which includes but is not limited to procedures for:

1. responsibilities at all levels of the command structure;
2. area designation by the Secretary of Defense either independently or in association with the Department of State; and
3. certification when an individual is subjected to a hostile act outside a designated danger area.

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8. Report by the General Accounting Office, "Preliminary Analysis of Military Compensation Systems in the United States and Five Other Countries," December 31, 1981, p.54.
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HOSTILE FIRE PAY ALTERNATIVES

ALTERNATIVE 1: LIMITED DESIGNATED AREA.

The Secretary of Defense has the authority to designate a danger area provided it is limited to only those territories and/or waters and air space where individuals are directly engaged with the enemy on a continuing basis or, if considered appropriate, to designate a danger area based upon declaration of such an area by the Department of State.

In either case, full coordination with the Department of State should be accomplished. Moreover, efforts should be made to minimize the scope of the designated area and to strictly enforce the requirements for direct engagement with the enemy in conjunction with the six-day rule. Boundaries of the area should be drawn to exclude, to the maximum extent practicable, those fringe or support areas in which individuals will not be regularly exposed to danger on a daily basis, i.e., areas in which there is not a strong likelihood of direct, daily confrontation with the enemy.

To be eligible for the pay an individual must be assigned to and present within the designated danger area for a period of six days in a given month; or, if not located in a designated danger area, be fired upon, encounter an exploding mine, etc. Those who are immediate members of the same group, infantry squad, patrol, ship or aircraft and who are subjected to the same hostile act are also eligible. (Requires commander's certification)

All eligible personnel will receive the same rate equal to the lowest Hazardous Duty Incentive Pay rate at the time.

ALTERNATIVE 2: HIGH/LOW RISK AREA APPROACH.

The Secretary of Defense has the authority to designate high-risk and low-risk danger areas, individually or concurrently, within the following parameters:

Low-Risk Area (LRA). Designation of a low-risk danger area is limited to those territories and/or waters and air space where individuals are subject to a greater than normal risk on a continuing basis but are not regularly exposed to danger.

- An individual must be assigned and present within the designated low-risk area for a period of six days in a given month; or if not located in a designated low-risk area, be fired upon, encounter an exploding mine, etc.

Those who are immediate members of the same group (infantry squad), patrol, ship, or aircraft and who are subjected to the same hostile act are also eligible. (Requires Commander's certification.)

- All eligible personnel will receive a low-risk area rate equal to the lowest Hazardous Duty Incentive Pay rate at the time.
- If an individual is in a low-risk area and is killed or wounded, that member becomes immediately eligible for the high-risk area rate.

High-Risk Area (HRA). Designation of a high-risk danger area is limited to those territories and/or waters and air space where individuals are directly engaged with the enemy on a continuing basis.

- An individual must be assigned to and present within the designated high-risk area for a period of six days in a given month.
- All eligible personnel will receive a high-risk area rate equal to 1-1/2 times the low-risk area rate.

ALTERNATIVE 3: MODIFIED HIGH/LOW RISK AREA APPROACH

The Secretary of Defense has the authority to designate high-risk and low-risk danger areas, individually or concurrently, within the following parameters.

Low-Risk Area (LRA). Designation of a low-risk danger area is limited to those territories and/or waters and air space where individuals are subject to a greater than normal risk on a continuing basis but are not regularly exposed to danger.

- An individual must be assigned and present within the designated low risk area for a period of six days in a given month; or, if not located in a designated low-risk area, be fired upon, encounter an exploding mine, etc. Those who are immediate members of the same group (infantry squad), patrol, ship, or aircraft and who are subjected to the same hostile act are also eligible. (Requires Commander's certification.)
- All eligible personnel will receive a low-risk area rate equal to the lowest Hazardous Duty Incentive Pay rate at the time.
- If an individual in a low-risk area is killed or wounded, that member becomes immediately eligible for the high-risk area rate.

High-Risk Area (HRA). Designation of a high-risk danger area is limited to those territories and/or waters and air space where individuals are directly engaged with the enemy on a continuing basis.

- An individual must be assigned to and present within the designated high-risk area for a period of one day in a given month.
- All eligible personnel will receive a high-risk area rate equal to 1-1/2 times the low risk area rate.

ALTERNATIVE 4: RESTRICTIVE HIGH/LOW RISK APPROACH.

The Secretary of Defense has the authority to designate high-risk and low-risk danger areas individually or concurrently, within the following parameters:

Low-Risk Area (LRA). Designation of a low-risk danger area is limited to those territories and/or waters and air space where individuals are subject to a greater than normal risk on a continuing basis but are not regularly exposed to danger.

- An individual must be assigned to and present within the designated low-risk area for a period of six days in a given month.
- All eligible personnel will receive a low-risk rate equal to the lowest Hazardous Duty Incentive Pay rate at the time.
- If an individual in a low-risk area is killed or wounded, that member becomes immediately eligible for the high-risk area rate.

High-Risk Area (HRA). Designation of a high-risk danger area is limited to those territories and/or waters and air space where individuals are directly engaged with the enemy on a continuing basis.

- An individual must be assigned and present within the designated high-risk area for a period of six days in a given month.
- All eligible personnel will receive a high-risk area rate equal to 1-1/2 times the low-risk area rate.

ALTERNATIVE 5: LIMITED HIGH/LOW RISK APPROACH.

The Secretary of Defense has the authority to designate high-risk and low-risk danger areas, individually or concurrently, within the following parameters:

Low-Risk Area (LRA) - Designation of a low-risk danger area is limited to those territories and/or waters and air space where individuals are subject to a greater than normal risk on a continuing basis but are not regularly exposed to danger.

- An individual must be assigned to and present within the designated low-risk area for a period of six days in a given month.
- All eligible personnel will receive a low-risk area rate equal to the lowest Hazardous Duty Incentive Pay rate at the time.
- If an individual in a low-risk area becomes killed or wounded, that member becomes immediately eligible for the high risk area rate.

High-Risk Area (HRA). Designation of a high-risk danger area is limited to those territories and/or waters and air space where individuals are directly engaged with the enemy on a continuing basis.

- An individual must be assigned and present within the designated high-risk area for a period of one day in a given month.
- All eligible personnel will receive a high-risk area rate equal to 1-1/2 times the low-risk area rate.

SUMMARY OF RESPONSES

Hostile Fire Pay

Issue 1. Change Name.

<u>Department</u>	<u>Responses</u>
Army	Danger Pay.
Navy	Risk Pay.
USAF	Danger Pay.
Coast Guard	Not discussed.
PHS	Danger Pay.
NOAA	Defer to Armed Forces.
JCS	Danger Pay.

Issue 2. Preferred Eligibility Criteria.

Army	Alternative #3 (high/low risk).
Navy	Alternative #1 (modified).
USAF	Retain current system (similar to Alternative #1).
Coast Guard	Alternative #5 (high/low risk).
PHS	Alternative #5 (high/low risk).
NOAA	Defer to Armed Forces.
JCS	Alternative #1 (modified).

Issue 3. Rate of Payment.

Army	Equal to lowest Hazard Pay.
Navy	\$150 suggested.
USAF	\$65 or nominal amount.
Coast Guard	Equal to lowest Hazard Pay.
PHS	Equal to lowest Hazard Pay.
NOAA	Defer to Armed Forces.
JCS	Equal to lowest Hazard Pay.

Issue 4. Total Cost.

Army	Not discussed.
Navy	Not discussed.
USAF	Believe proposed option more costly than current system.
Coast Guard	Not Discussed.
PHS	Not Discussed.
NOAA	Defer to Armed Forces.
JCS	No Comment.

Issue 5. Simplicity vs. Complexity.

Army	Not discussed.
Navy	Keep simple, defer to JCS.
USAF	Keep simple.
Coast Guard	Not discussed.
PHS	Not discussed.
NOAA	Defer to Armed Forces.
JCS	Keep simple.

Remarks:

Army	Add provision for individuals on official duty fired upon when outside designated area.
Navy	Pay when State Department pays.
USAF	Keep simple.
Coast Guard	Two-tiered system provides greater flexibility.
PHS	None.
NOAA	Defer to Armed Forces.
JCS	Pay when State Department pays. If #5 selected need retroactive provision for those outside designated area.

LEGISLATIVE IMPLICATIONS

Hostile Fire Pay

1. Amend 37 U.S.C. 310(a) to include tightened eligibility criteria and increase payment to lowest hazardous duty pay rate.
2. Amend 37 U.S.C. 310 to change name to read, "Special Pay: duty subject to danger."

37 U.S.C. 301(a)(14) PROPOSED
INCENTIVE PAY: HAZARDOUS DUTY INVOLVING FREQUENT AND
REGULAR PARTICIPATION IN INTELLIGENCE
AND INVESTIGATIVE DUTY

**INTELLIGENCE AND INVESTIGATIVE DUTY PAY
(PROPOSED)**

PRIMARY ANALYST
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INTELLIGENCE AND INVESTIGATIVE DUTY

I. PURPOSE. The purpose of this proposed pay would be to provide an incentive to uniformed personnel for the performance of hazardous duty required by orders filling intelligence and investigative positions.

II. DATA SOURCES. The bulk of the information used for this analysis was obtained from the U.S. Air Force. The U.S. Coast Guard also provided data. Additional information was obtained from the Office of Personnel Management, Federal Bureau of Investigation, United States Marshalls Service, Drug Enforcement Agency, Central Intelligence Agency, U.S. Secret Service, Fairfax County, Virginia, Police Department, and the Metropolitan Police Department of the District of Columbia.

III. HISTORICAL PERSPECTIVE. A QPMC review of a proposed Hazardous Duty Incentive Pay (HDIP) for intelligence and investigative personnel was requested by the Air Force. Service positions concerning the usefulness of this proposed pay were requested on 28 June 1983. Only the Air Force indicated a potential need for an intelligence and investigative HDIP, to be used for personnel assigned to the Air Force Office of Special Investigations (AFOSI). Thus, the bulk of information utilized in this analysis came from the Air Force. All Services have organizational elements similar to AFOSI except the Public Health Service and NOAA. However, the Navy's AFOSI counterpart, the Naval Investigative Service (NIS), is comprised almost entirely of civilian agents. The Coast Guard provided data concerning its intelligence program but stated that sufficient special and incentive pay alternatives were already available for use in this area if required. The Army stated that they did not believe sufficient justification existed within the Army's intelligence and investigative fields to support such a pay. The Marine Corps supported the concept of the pay but felt it could not be justified at the present time.

IV. METHODOLOGY. Since the proposed special pay would fall into the Hazardous Duty Incentive Pay category, this analysis will focus on two questions. First, are duties in the intelligence and investigative (I & I) field sufficiently hazardous to require special compensation? Second, is an incentive needed to help resolve manning or retention problems? Section One will address the hazard issue, while Section Two will deal with I & I manning and retention. As previously mentioned, this review was initiated by the Air Force who also provided the preponderance of information for the study (Coast Guard also provided information). Thus, the analysis will center primarily on data pertaining to the Air Force Office of Special Investigations. The third section will present public-sector and Armed Services compensation comparisons. Finally, Section Four will address the cost associated with implementing such a proposal.

V. ANALYSIS.

A. SECTION ONE: SERVICE PROGRAMS. The Air Force has current authorizations for approximately 1,438 intelligence and investigative agents within its Office of Special Investigations (AFOSI). This number is

comprised of 482 officer, 842 enlisted, and 114 civilian agents. Assignment of both officer and enlisted personnel to duties in the intelligence and investigative field is made on a voluntary basis. Duty within AFOSI constitutes career fields for military personnel where members can serve continuously throughout a career.

The Army has a similar organization, the Criminal Investigation Division Command (CIDC), of roughly the same size as AFOSI. CIDC investigators are all military. The agent force is approximately 60% warrant officers and 40% enlisted personnel. CIDC duties constitute a career field for these agents.

In contrast, the Navy employs approximately 700 civilian investigators who represent over 90% of the Naval Investigative Service (NIS).

The Coast Guard has authorizations for 87 enlisted agents who normally serve only one, four-year tour assigned to Coast Guard Intelligence (CGI). These duties do not consist of a career field for Coast Guardsmen.

Duties and Hazards: In support of the overall mission of the Air Force Office of Special Investigations, agents perform duties in the following areas:

1. criminal, counter-terrorism, internal security, and special investigative services;
2. personal protective services and operations;
3. collection and reporting information pertinent to base security and resource protection; and
4. counter-intelligence services and support.¹

During the course of a career in AFOSI, Air Force agents may expect to serve in positions requiring the performance of all of the above duties. Work as a special agent generates a great deal of job related stress. For the most part, agents work relatively independently facing the unique challenges of a wide variety of cases. The nature of the work often requires long and irregular working hours. Of the multitude of duties performed by AFOSI agents, two areas appear to present a greater potential for personal risk than the remainder: undercover operations and protective service/anti-terrorist operations (PSO/AT).

Undercover operations generally require agents to penetrate hostile organizations or groups in order to gain information concerning crimes or planned criminal activity. This type of duty imposes stress on undercover agents and sacrifice in their personal lives. Further, the risk of discovery by target group members poses a potential hazard. In recent years, a large number of the cases handled by AFOSI agents have been drug related.

Protective Service/Anti-terrorist Operations (PSO/AT) duties also provide a possible degree of hazard. In Protective Service Operations, agents perform duties similar to those performed by U.S. Secret Service personnel while safeguarding senior Air Force Commanders or government dignitaries. Agents are trained to respond to threats on the protectee regardless of personal risk.² AFOSI agents also conduct covert surveillance of senior personnel to determine if the dignitary is a possible target of terrorist activity. Conducting these countersurveillances may place agents in potential danger in the event of a terrorist attack. During FY82, AFOSI agents expended approximately 96,000 manhours (46 manyears) conducting PSO/AT operations.

The Air Force estimates that agents spend a minimum of 50% of their time performing duties such as criminal and counter-intelligence operations, PSO/AT, undercover operations, criminal apprehensions, vehicular surveillance, developing and handling sources, high performance driving and security surveys. From FY78 through FY82, 52 incidents were recorded involving AFOSI agents. Most of these incidents involved threats to agents made either telephonically, in person, or through a third party. Other incidents involved damage to personal or government vehicles, bomb threats to AFOSI offices or agent homes by criminal elements, or attempted assault with a vehicle. None of these incidents resulted in injuries, fatalities, abductions, or agents being fired upon. The Coast Guard reports a number of similar incidents including one agent being injured as a result of being physically assaulted while on surveillance in 1981, and another agent, also on surveillance, being fired upon in 1979.

In general, agents of all Services perform duties similar to those performed by Air Force agents.

B. SECTION TWO: THE AFOSI PICTURE.

1. Manning. Table 1 shows officer and enlisted manning levels for AFOSI agents, comparing the number of authorizations for agents to the number of agents assigned. Data is shown for fiscal years 1981 through 1983. Data for earlier years is not available. Manning for both officer and enlisted is in excess of 100%. Although enlisted manning has fallen from 118% to 102%, an increase of 108 authorizations occurred during the period. Projected agent authorizations through FY87 are shown in Table 2. A growth of 17 officer and 54 enlisted authorizations is expected over the period, with the bulk of the growth occurring in FY84.

Table 1
AFOSI Manning FY81-FY83 (Authorized/Assigned)

	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>
Officer	104% (447/465)	101% (473/480)	102% (482/494)
Enlisted	118% (734/867)	107% (834/892)	102% (842/861)
TOTAL	113% (1,181/1,332)	105% (1,307/1,372)	102% (1,324/1,355)

Table 2
Projected AFOSI Agent Authorizations
FY84 - FY87

	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>
Officer	496	497	498	499
Enlisted	<u>882</u>	<u>889</u>	<u>893</u>	<u>896</u>
TOTAL	1,378	1,386	1,391	1,395

In summary, adequate manning of AFOSI positions has existed in recent years. Only moderate growth is projected over the next four fiscal years.

Table 3 shows AFOSI manning for the current fiscal year (1983) by pay grade. For officers, the most serious grade imbalance occurs at the O-3 level, manned at 73%. However, overmanning in the O-1/O-2 grades should rectify this situation in the future as these officers are promoted. The enlisted authorized/ assigned match is generally good, with the largest shortages at E-8 and E-9. Shortages have been numerically alleviated by accepting personnel at the E-4 level for whom there are no authorizations. This action reduces the current overall experience of the AFOSI career field, but may serve to increase experience over the long term. Serious grade imbalances are not evident.

Table 3
FY83 AFOSI Manning by Grade

<u>Pay Grade</u>	<u>Authorized</u>	<u>Assigned</u>	<u>Percent Manned</u>
O-6	27	22	81%
O-5	51	65	127%
O-4	115	103	90%
O-3	209	153	73%
O-2/1	80	151	189%
<u>Total Officer</u>	<u>482</u>	<u>494</u>	<u>102%</u>
E-9	21	18	86%
E-8	45	40	89%
E-7	166	168	101%
E-6	253	247	98%
E-5	357	332	93%
E-4	0	56	-
<u>Total Enlisted</u>	<u>842</u>	<u>861</u>	<u>102%</u>
 Total Agents	 1,324	 1,355	 102%

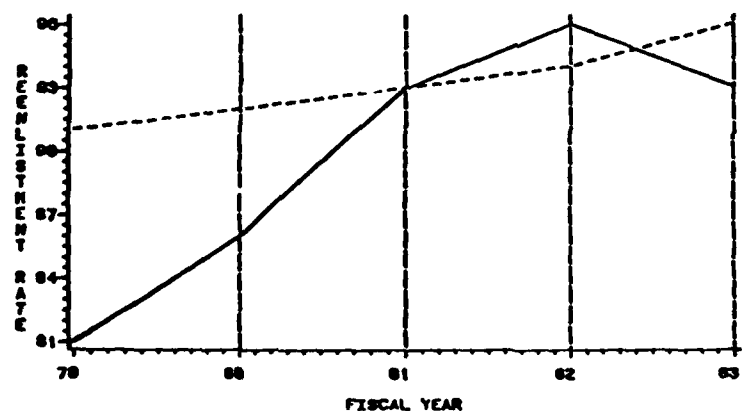
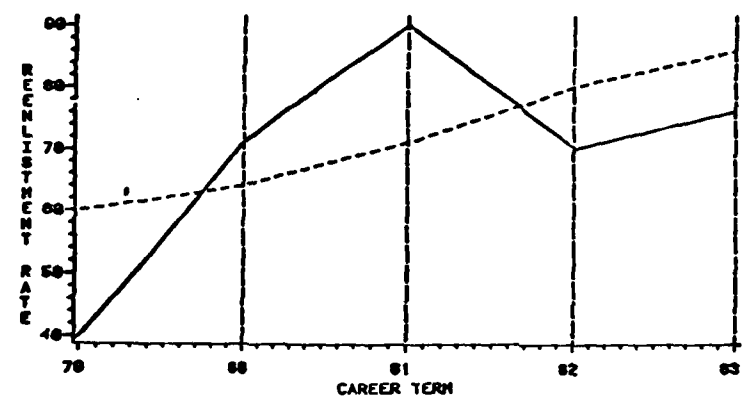
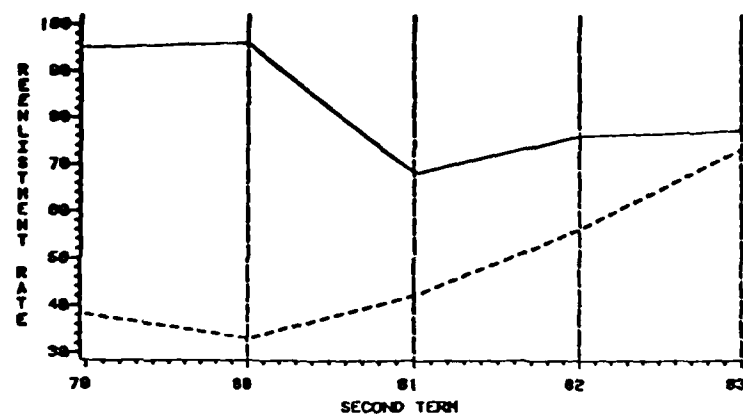
2. Attraction. Assignment to duty as an AFOSI agent is made strictly on a voluntary basis. Thus, the ability to meet manpower requirements for agents relies on the ability to attract qualified personnel to the field. Further, AFOSI does not recruit new Air Force accessions, but relies on obtaining volunteers from personnel already serving in other career fields. The Air Force states that they have had no problems in obtaining sufficient volunteers to meet accession requirements. However, they indicate that they have had difficulty in accessing the quality of personnel desired. Recently, they have accepted personnel in pay grade E-4, while the desired grade level remains E-5.

3. Retention. Reenlistment rates for AFOSI enlisted agents are compared with overall Air Force reenlistment rates for the first, second and career terms in Figure 1. It should be realized in evaluating this information that personnel typically do not enter the AFOSI career field until they have reached pay grades E-4 through E-6 and have approximately 3 to 5 years of service. Also, prior to attending AFOSI training and entering the career field, trainees must have four years of service obligation remaining. Therefore, the number of AFOSI agents eligible to reenlist at the first and second terms is quite small, usually between 20 and 50 at each term per year. The small numbers involved cause reenlistment rates to vary widely from year to year in comparison to the more stable, overall Air Force rates. The obligated service requirement for new agents also helps to explain the comparatively high first term reenlistment rates which have exceeded Air Force rates for the years shown.

Second term reenlistments generally show an upward trend and are comparable in all years but FY79. Career term reenlistments are the most important for AFOSI, as the majority of reenlistment eligible agents are in this category. Career term agent reenlistment rates also exhibit an upward trend and are comparable with overall Air Force reenlistments for the last three fiscal years shown. It was during this time frame, 1 October 1980 to 31 March 1983, that a Selective Reenlistment Bonus (SRB) was offered to AFOSI agents in Zone C (10-14 years of service). The SRB multiple was one.

Figure 1

AFOSI AGENT REENLISTMENT RATES FIRST TERM



LEGEND: TYPE — OBS — ALL AIR FORCE

FIRST HALF FY 83 ONLY

Continuation rates for officer AFOSI agents are not available. However, for the five fiscal years, 1978 to 1982, 185 AFOSI officer accessions were required to support an average annual authorized strength of approximately 475. During the period, authorizations grew by 20 positions. Thus, on the average, 33 officer accessions were required annually, meaning that the entire AFOSI officer force would be replaced approximately every 14 years. This figure compares favorably with replacement times for Air Force Officers as a whole. Table 4 shows officer losses from AFOSI for FY80-FY82. The "other" category includes officers cross-flowing into other career fields. The average annual loss over the period was 29 officers per year, while separations from the Service averaged 7 per year. Total losses were about 6% of the AFOSI officer force, a reasonable rate in view of the reduction in requirements between the O-3 and O-4 level and the O-4 and O-5 level.

Table 4
AFOSI Officer Losses FY80-82

	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
Separations	11	3	8
Other Losses	28	24	12
Total	39	27	20

C. SECTION THREE: COMPENSATION COMPARISON. AFOSI agents receive little compensation other than basic pay and allowances. As described previously, a Selective Reenlistment Bonus (SRB) was offered for a limited period. Enlisted agents receive an initial clothing allowance of \$760 upon entering the career field and \$380 every three years thereafter. Clothing allowances are also common in civilian agencies.

Federal law enforcement agents enter an agency at a variety of General Schedule (GS) grades from GS-5 to GS-11. Agents hired by the U.S. Secret Service, Drug Enforcement Agency, and U.S. Marshalls Service generally start at the GS-5/7 level with higher starting levels offered by the Federal Bureau of Investigation (GS-10) and Central Intelligence Agency (GS-9/11). The entry level positions reflect the agency's entry qualifications in terms of education and experience. While most require, or eventually hire college graduates, those agencies with the higher starting grades usually require additional, fairly extensive, educational/experience qualifications in technical areas. While an exact count of federal agent positions is not available, discussions with a number of federal law enforcement agencies indicate that turnover of agents is relatively low and competition for the limited available positions is keen. The U.S. Secret Service, for example, estimates approximately 200 applications are filed for every available agent position. Personnel advance through the grades at varying rates. Initial promotions are generally based upon time up through the journeyman level.

In some agencies, the F.B.I. for example, promotions are not automatic and agents have no assurance of reaching the higher agent grades, GS-12/13. The average field agent level reported by agencies ranges from GS-9, through GS-10/11, to GS-12. The GS-13 level is normally the highest field grade, encompassing administrative/supervisory duties as well. In addition to the General Schedule salary, agents can be authorized Administratively Uncontrolled Overtime (AUO) at a rate between 10% and 25% of their base salary, not to exceed 25% of the salary of a GS-10, step one.

Figure 2 compares the average earnings of a "composite" federal agent with the average Regular Military Compensation (RMC includes basic pay and allowances, variable housing allowance, and tax advantage) of officer and enlisted personnel. The "composite" agent was constructed utilizing general promotion practices of a number of federal agencies and reflects an entry level of GS-5, promotions through grades 7, 9, and 10 at one year intervals to grade GS-11 after 4 years' service. Promotion to GS-12 comes after 8 years' service and grade GS-13 after year 16. Salaries also include continuous AUO at the 25% rate for all years. AFOSI entry levels were O-1 with no service for officers, and E-4 with 4 years' service for enlisted personnel. Due course promotions were assumed. FY83 military and Civil Service pay scales were used.

Figure 2
FEDERAL SALARY COMPARISON
AVERAGE RMC VS SALARY PLUS A.U.O.

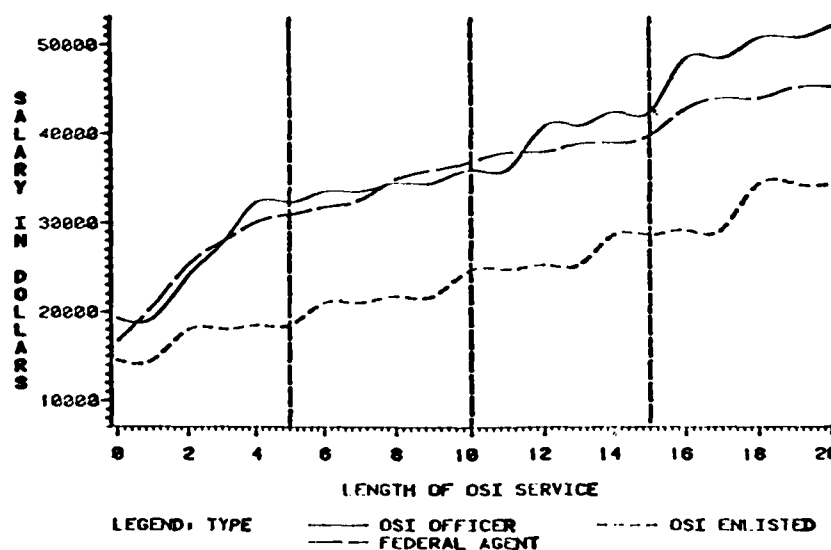


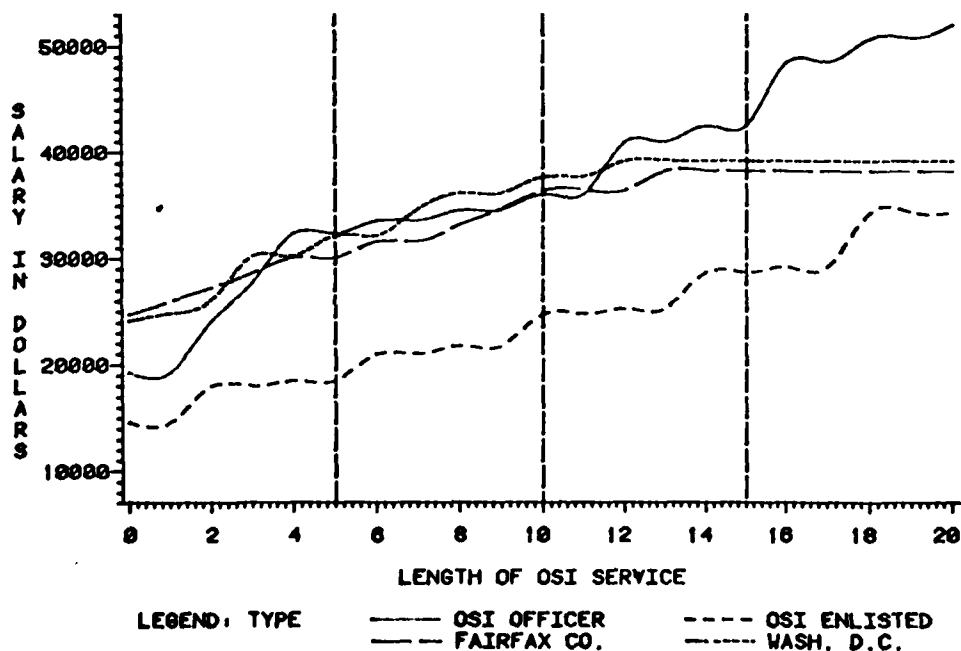
Figure 2 shows that earnings for AFOSI officers are quite comparable to salaries for federal investigators. There is a decided gap, however, between earnings for enlisted AFOSI agents and the salary of the "composite" federal investigator. This gap is generally in the \$10,000 to \$14,000 per year range.

Figure 3 shows the same comparison between salaries for officer and enlisted personnel and salaries earned by criminal investigators employed by the Fairfax County, Virginia, and District of Columbia Police Departments. These jurisdictions are in high cost of living areas. Criminal investigators are not generally hired "off the street" but are selected from among the current police officer force of the jurisdiction. Data for the Fairfax County Police Department assumes that the officer is advanced to the "Master Police Officer" level after year 8 and reaches the maximum earning level after 12 years. The most rapid advancement path was assumed for Washington D.C. investigators. For both departments, 8 hours of overtime per week is included.

Figure 3

DETECTIVE SALARY COMPARISON

AVERAGE RMC VS SALARY PLUS OVERTIME



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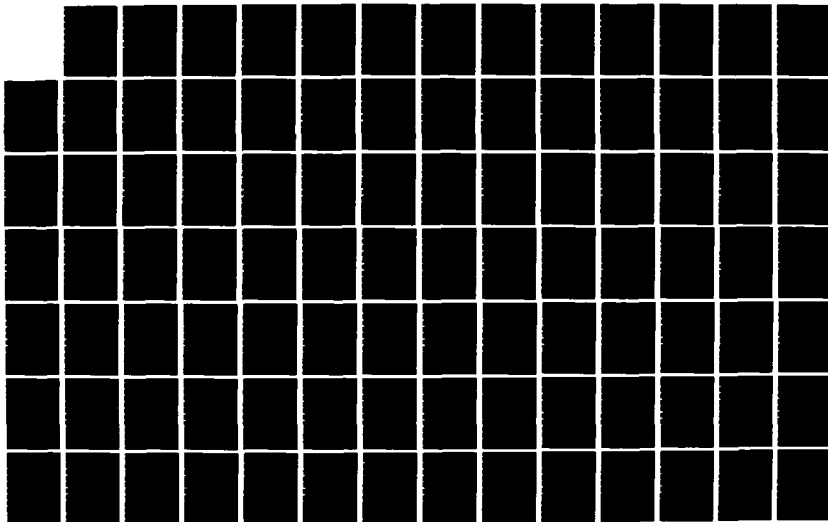
QUADRENNIAL REVIEW OF MILITARY COMPENSATION (5TH)
VOLUME 3 SPECIAL AND INCENTIVE PAY(S) OFFICE OF THE
SECRETARY OF DEFENSE WASHINGTON DC NOV 83

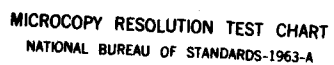
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Figure 3 also shows that officer earnings compare favorably to earnings of the two local level police organizations shown. Again, a considerable difference exists between enlisted OSI agents and civilian investigators.

D. SECTION FOUR: COST. Current rates of Hazardous Duty Incentive Pay are \$110/month for officers and \$83/month for enlisted personnel. Based upon these rates, the estimated cost of HDIP for AFOSI agents is estimated below for fiscal years 1984-1987.

Table 5
Estimated Cost of Proposed HDIP for AFOSI Agents
FY84-FY87

<u>Fiscal Year</u>	<u>Officer Cost (\$000)</u>	<u>Enlisted Cost (\$000)</u>	<u>Total (\$000)</u>
1984	655	878	1,533
1985	656	885	1,541
1986	657	889	1,546
1987	658	892	1,550

VI. FINDINGS.

A. Duties in the intelligence and investigative field may present potential hazards greater than those experienced by some servicemen. However, sufficient evidence is not currently available indicating a hazard level warranting a Hazardous Duty Incentive Pay to be paid to all agents.

B. Aggregate current manning and that in the recent past within the AFOSI career fields is generally satisfactory. Attraction and retention are comparable with overall Air Force norms.

C. Officer compensation is comparable to that offered for similar work in the civilian sector of the economy.

D. Enlisted agent compensation is significantly lower than compensation received by civilian criminal investigators; this may create some draw to the outside market. However, competition for these positions is considerable, particularly for the more prestigious and higher paid agencies.

E. Authorizing HDIP for the entire career field is not considered an appropriate method of increasing compensation for the enlisted force. Greater financial incentives can be offered, and more effectively targeted, through use of the SRB should significant manning problems develop.

VII. RECOMMENDATION. A new HDIP for Intelligence and Investigative duty should not be adopted.

References

1. Air Force Regulation 23-18, 24 November 1980.
2. U.S.A.F. Staff Study "Hazardous Duty Incentive Pay for AFOSI Special Agents", 29 September, 1982.

SUMMARY OF RESPONSES

Intelligence and Investigative Duty (Proposed)

ISSUES:

1. Sufficient evidence that intelligence and investigative duty presents hazards justifying payment of a Hazardous Duty Incentive Pay is not available.

2. A Hazardous Duty Incentive Pay for the performance of intelligence and investigative duties, in addition to those special and incentive pays already available, is not justified.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Does not concur. Believes a special HDIP is justified for enlisted AFOSI agents.
Coast Guard	Concurs.
NOAA	Defers to Services with intelligence and investigative personnel.
Public Health Service	Concurs.
Joint Chiefs of Staff	Concurs.

37 U.S.C. 306
SPECIAL PAY: OFFICERS HOLDING POSITIONS OF
UNUSUAL RESPONSIBILITY

RESPONSIBILITY PAY

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RESPONSIBILITY PAY

I. PURPOSE. Responsibility Pay provides an additional payment for officers in special assignments carrying responsibilities over and above those of other officers of the same grade. The pay is simply recognition for the heavy, direct personal responsibility required of personnel in selected duties. With this purpose in mind, Responsibility Pay was examined to determine both its appropriateness in terms of need and level of payment.

II. DATA SOURCES. Data was obtained from the Service Staffs of the Army, Navy, Marine Corps, Air Force, and Coast Guard, and selected historical reports and studies. The Public Health Service and NOAA are not authorized the pay and submitted negative reports. Although not a primary data source, limited field interviews were conducted at Navy commands in Washington, DC, Norfolk, VA, Charleston, SC, and San Diego, CA.

III. HISTORICAL PERSPECTIVE. Differentiation in pay for military personnel has existed since the Revolutionary War. Officers of equal rank in the cavalry and the infantry received different payments. During this time, various ranks and branches of the Army were also granted additional amounts of pay or rations. It was recognized that certain positions with equal rank carried with them factors that dictated extra compensation.

First authorized in the Military Pay Act of 1958 (P.L. No. 85-422), Responsibility Pay was intended as the officer counterpart to enlisted Proficiency Pay. Rates were established at \$150 a month for pay grade O-6, \$100 for pay grade O-5, and \$50 for pay grade O-4 and O-3. The Senate Armed Services Committee recommended this provision because:

(1) Under the present pay system, an officer's pay is determined principally by his rank. It is recognized that both the abilities and responsibilities of officers within a particular grade vary to a considerable degree.

(2) The changing nature and complexity of our weapons systems are creating demands for unusual responsibility in both staff and command assignments, or a combination of both. These responsibilities, in many cases, may be distinguishable from the bulk of others held by those in that rank.

(3) Neither the present pay system nor the promotion system adequately acknowledges this type of individual. An example is shown by the fact that even though an officer may be occupying and adequately performing in a position of unusual responsibility, he nevertheless may be prohibited from receiving additional pay because of the fact that he is not

within a so-called zone of consideration for promotion, which is based solely on the length of service in the particular grade.¹

This action was taken in the wake of the "Sputnik scare" which resulted in great concern over the real or perceived technological lag of the United States behind the Soviet Union. It was a means to superimpose the "pay for the position" concept on the military's "rank invested-in-the-man" model in which rank is equated with responsibility. The Cordiner Committee Report, published in May 1957, reinforced this approach by stating that the program proposes:

A modern compensation plan to pay people what their services are actually worth, instead of paying people on the basis of longevity of service, and in this way encourage and reward outstanding performance, advanced skills, and military careers for high quality personnel.²

Soon after passage of the Responsibility Pay legislation, the Services were requested to study the implications of the legislation and to submit plans for administering the pay. At that time, Service reaction to the pay was somewhat negative. The Department of Defense's position was reflected in a February 1960 Defense letter to the Chairman of the Senate Armed Services Committee. The key paragraph read:

We have also taken reasonable pause in this matter because of our belief in the historic concept that officers are trained for, and expect to assume, increasingly heavy responsibilities in varying assignments and that present promotion systems afford those officers of demonstrated ability recurring opportunities for advancement to higher rank. Our preliminary review of those billets for which we would authorize responsibility pay, were it to be implemented, indicated that these same billets are the ones to which the conscientious, forward-looking officer aspires in order to demonstrate his capabilities and qualifications for promotion³

Based upon the recommendation of the Defense Study of Military Compensation,⁴ the Department of Defense in 1963 urged that the authority for Responsibility Pay be repealed for the following reasons:

1. That there should be no distinction between persons of equal rank and length of service for the purpose of pay since rank itself should be considered equal with responsibility.
2. That it would be difficult to administer without serious problems of equity and morale.⁵

The House at first agreed and passed the repeal provision in the pay bill. The Senate, however, deleted the repeal provision and the House later concurred in this action. the Senate Armed Services Committee gave the following reasons for retention:

1. The fact that the system has not been used does not necessarily mean that the provision is unsound. Both the Navy and the Air Force have urged its implementation.
2. The basic premise of the provision is that the relatively small number of officers holding positions of such greater responsibility than occur in normal assignments might well be rewarded with some additional compensation. Both the abilities and responsibilities of an officer within a particular grade vary to a considerable degree. The military services already recognize this variance for the purpose of assignments. Both the additional responsibility and often the longer hours that accompany such assignments would provide an added incentive for superior achievement.⁶

With the heavy involvement of the United States in Vietnam in the late 1960's and early 1970's, Army and Navy officers holding civil-military positions of senior province/district advisors or riverine forces advisors were paid Responsibility Pay as an inducement to remain longer than the one-year prescribed combat zone tour lengths. Since 1973, the pay has been used only by the Coast Guard and the Navy.

The Third Quadrennial Review of Military Compensation (1975-76) found that Responsibility Pay provided flexibility in the compensation system. It, therefore, recommended retention of the pay.⁷

The current authority for Responsibility Pay is established in Title 37, United States Code. Through this provision of the code, the Secretary of the Military Department concerned may designate positions as unusually responsible and critical to the operations of the Service. Medical officers, optometrists, dentists, and veterinarians are not authorized the pay. Officers meeting the Services' prescribed criteria are entitled to a monthly payment of \$150 for an O-6, \$100 for an O-5, and \$50 for an O-4 or O-3. Each Service is limited to paying not more than five percent of their total personnel in pay-grade O-3, and not more than ten percent of the total personnel in each of the pay grades O-4, O-5, or O-6. By March 1, of each year, the Secretary of Defense and the Secretary of Transportation are required to report to Congress their disbursement of Responsibility Pay. The limited scope of this program is shown in Table 1.

Table 1
Responsibility Pay Recipients and Costs

<u>Fiscal Year</u>	<u>Army</u>	<u>Navy</u>	<u>Coast Guard</u>	<u>Cost (\$000)</u>
1971	238			143
1972	200	128		202
1973	82			65
1974			Not Avail	109
1975			Not Avail	109
1976			Not Avail	109
1977			Not Avail	28
1977			Not Avail	109
1978			105	106
1979			104	108
1980		852	106	997
1981		878	95	1,249
1982		879	99	1,257

Since July 1, 1973, Coast Guard officers in pay grades O-3 through O-6 assigned and serving as commanding officers, have been paid Responsibility Pay. The Navy has, beginning March 7, 1980, authorized Responsibility Pay for officers who are entitled to wear the Command-at-Sea Insignia.

IV. METHODOLOGY. Since Responsibility Pay was not designed as an incentive to attract and retain officers for certain positions, the evaluation must of necessity take a subjective approach. Thus, this review was structured in a non-analytical manner to consider, based upon the collective experience and judgment of this review group, along with Service inputs, the following aspects of Responsibility Pay:

- A. Appropriateness and Effectiveness
- B. Eligibility
- C. Rates

V. ANALYSIS.

A. APPROPRIATENESS AND EFFECTIVENESS. There is some disagreement among the Services on the merits of this pay. From those who oppose the pay, the crux of any discussion on the appropriateness of Responsibility Pay is that officers will aspire to and perform in demanding leadership positions of unusual responsibility without additional pay, particularly those who occupy commander or commanding officer billets. Usually the assignment to these positions is sufficient reward in itself, and the esteem of such assignments, regardless of how arduous the duties, is recognition beyond any monetary value. Further, since such assignments frequently enhance or accelerate promotion opportunity, additional reward

and recognition is later provided both in actual dollars and in other intangible benefits. Therefore, they argue this special pay is not required.

Little of this argument can really be refuted. In fact, a commander's position should not be viewed any other way. The Services are certainly not experiencing a reluctance by officers to accept positions of unusual responsibility and of a critical nature. However, the question is not whether officers are willing to perform such duties, rather that they do perform them. The pay is one of recognition, not incentive. It is intended to compensate individuals for performing duties that exceed the normal span of control and carry with them greater than normal responsibilities. Command at sea, for example, is an arduous, inescapable twenty-four hour a day job. Few individuals have the direct responsibility for a ship, the people and equipment in it, the requirement for continuous vigilance, and the unusual attention to duty requirements of the at-sea commanding officer. In addition to shipboard responsibilities, the at-sea commander often acts as a representative of the U.S. Government wherever the ship is ordered. The manner in which the commander handles himself and the conduct of his crew has a direct impact on politically sensitive issues of international importance. Unlike the commander of a shore based unit, the at-sea commander must frequently operate without benefit of rapid, direct access to supervisors - decisions must be made quickly, decisively and correctly based on his personal evaluation of the situation.

When discussing the appropriateness of Responsibility Pay, it is helpful to look at its intent, together with its likeness to civilian sector positions, as Senator Stennis did in the March 25, 1958 Congressional Record:

To continue [from the discussion of proficiency pay for enlisted personnel] the principle of extra pay based upon the responsibility which an officer may have, or based upon the criticality or the unusual responsibility of his service, the [Senate Armed Services] Committee included an amendment... The amendment provides that any officer who is serving in a capacity of unusual responsibility and is supplying a critical need, may be selected for additional compensation. I remember asking General Twining, when he was on the stand, if, in the bill without the amendment to which I have referred, there was any way by which special pay could be granted to an officer having a special skill. He said there was not, and an illustration was given... The illustration was of a colonel who had charge of an air wing. He was a commanding officer. He had under him many trained crews and trained officers. He had the responsibility for the care of hundreds of millions of dollars invested in equipment... The pay of the

vice president [of a medium-sized corporation] was 2 or 3 times as much as that of the colonel. I asked if there was any way to increase the compensation of the colonel in question, because of his special responsibility, without also increasing the pay of other colonels in the Air Force, and the corresponding officers in the Army and Navy. The answer was that there was no way. So that was a part of the reasoning which led to the formulation of the amendment to which I am addressing myself now--- the amendment providing for Responsibility Pay within the ranks of officers. Frankly, we present the amendments in a modified form and on very small scale... that it will not be necessary to increase the pay of all groups in order to reach one. In other words, the system will tend to place the additional pay where the additional responsibility is and where the additional work is.⁸

The intent of Congress to provide this pay in recognition of the responsibilities borne is clear. Further, the comparison of these critical positions to the private sector remains pertinent. Private companies reward their "front runners" with jobs, status, and monetary incentives. The military compensation system, however, is much more limited.

Another criticism about Responsibility Pay is that the value of an officer's service is not measured by the assignment he holds, but by the level of responsibility for which he has been found qualified and ranked. However, this is only part of the total valuation. Measuring the value of an officer goes far beyond his current grade or assigned level of responsibility. When Congress established Responsibility Pay, they recognized that both ability and responsibility of personnel within a grade vary considerably. Individuals are often assigned to responsible positions while carrying a rank lower than that established for the position. The present military pay and promotion systems do not fully recognize and compensate certain individuals filling positions of a critical nature that require unique leadership abilities. Responsibility Pay permits the recognition of exceptional officers who perform in unusually responsible jobs, but who cannot be immediately promoted or otherwise compensated. It should be noted that the 1978 President's Commission on Military Compensation (Zwick Commission) cited the limitations of the current basic pay system on this issue. In fact, they went so far as to recommend a time-in-grade pay table, but their recommendation was not adopted. Lacking such a scale, the only means available to recognize quality leaders was Responsibility Pay.

Only the Navy and the Coast Guard are currently using the pay. This has not always been the case, however. As noted earlier, the Army and Navy used it for its senior Regional Advisors in Vietnam. Moreover, there are several pays in existence that are not used equally by all the Services. Aviation Officer Continuation Pay was used only by the Navy

and Marine Corps. The Air Force currently uses Engineering and Scientific Career Continuation pay, the other Services do not.

There are those who say that singling out certain positions for extra pay tends to relegate all other positions to second class status. Within the Coast Guard and the Navy, experience shows that just the opposite occurs. The fact that the commander of a Coast Guard or Navy vessel receives extra compensation has tended to further enhance the position of the commanding officer in the eyes of his people.

Finally, there is the question of whether the dollar investment for this pay is worth the benefits derived. Most believe that it is. The positive effect felt by the selected officers receiving this pay, in terms of recognition for performing special duties, in association with the prestige viewed by their subordinates are clearly what the pay was designed to accomplish.

B. ELIGIBILITY. Under 37 U.S.C. 306, the Service Secretaries may designate which positions should be identified for Responsibility Pay, provided not more than 5% of active duty officers in grade O-3 and not more than 10% of the officers in each of the pay grades O-4, O-5, or O-6 receive the pay. Currently, an average 6% of O-6s, 7% of O-5s, 1% of O-4s, and 0.1% of O-3s receive this pay. We do not propose to change the limiting percentages (except for a possible expansion for O-3 and below at 5% of active personnel in those grades). Maintaining this provision will reinforce the need to restrict the pay to only those positions that are truly of a highly responsible and critical nature. Judicious application will not only enhance these positions of great responsibility, but will insure that those who are truly deserving receive it, further lending credibility to its need as an appropriate form of recognition.

C. RATES. Because the pay is one of recognition rather than incentive, determining appropriate rates becomes a matter of judgment. We believe that the graduated amount based on grade, normally associated with level of responsibility, is appropriate and that this aspect of the present system should be maintained. Responsibility pay rates have never been adjusted and have lost much of the reward value associated with the pay. Because this pay has been in existence since 1958, applying the CPI from 1958 would result in a level of payment that would be cost prohibitive. Therefore, we believe that a fair and reasonable approach to determining appropriate rates is to apply the CPI beginning in 1980, the year that the Navy, the largest using Service, began authorizing the pay. Although the Coast Guard had begun using the pay in 1973, the numbers were small and the level of payment was satisfactory during that period of time. Hence, the rates contained in Table 2 are proposed:

Table 2
Proposed Responsibility Pay Rates

<u>Paygrade</u>	<u>Monthly Rate*</u>
O-1, O-2, W-1 - W-4	\$50
O-3/O-4	\$75
O-5	\$150
O-6	\$200

*All rates are rounded.

Some Coast Guard vessels are commanded by lieutenants, ensigns, warrant officers, or officers-in-charge (E-6 - E-9). Of these, only the lieutenant is presently eligible for Responsibility Pay even though those of lower rank are performing similar functions. If a position has been designated as a Responsibility Pay billet, the individual serving in that position should receive the pay based on the scale by grade, but otherwise regardless of rank. Care must be taken to insure that all the billets are truly critical and of unusual responsibility. The current Responsibility Pay statute requires modification if officers in the grade of O-1 and O-2, and warrant officers are to receive this pay. However, for enlisted personnel, this recognition may be accomplished, if the billet is deemed appropriate, through use of the proposed Special Duty Assignment Pay (replaces Proficiency Pay; similar to that now paid by the DoD services to drill instructors and recruiters).

VI. FINDINGS.

1. Special pay for positions of unusual responsibility, and of a critical nature, is appropriate and has been effective in providing proper recognition. It should, therefore, be retained.

2. The provision allowing the Secretaries concerned to designate which positions are truly of a highly responsible and critical nature is appropriate.

3. Eligibility should be expanded to include grades O-1, O-2, and W-1 to W-4. Payment should be limited to 5% of the personnel in each of these pay grades. Similar recognition of enlisted personnel should be through the judicious use of the proposed Special Duty Assignment Pay (replaces Proficiency Pay).

4. Responsibility Pay rates should receive a fair and reasonable adjustment.

VII. RECOMMENDATIONS.

1. Retain special pay for positions of unusual responsibility and of a critical nature.

2. Set Responsibility Pay rates for pay grades W-1 through W-4, and O-1/O-2 at \$50 per month and increase the rate for O-3/O-4 to \$75, O-5 to \$150, and O-6 to \$200, monthly.

3. Amend Title 37 U.S.C. 306(c) to provide that payment be limited to not more than 5% of the active duty officers in pay grades W-1 through W-4 and O-1/O-2. Limits established for other pay grades should remain unchanged.

References

1. Senate Report No. 1472, accompanying H.R. 11470, 85th Congress, 2d Session, 1958, pp.7-8.
2. A Modern Concept of Manpower Management and Compensation for Personnel of the Uniformed Services, A Report and Recommendation for the Secretary of Defense by the Defense Advisory Committee on Professional and Technical Compensation, May 1957.
3. Secretary of Defense Letter to Senate Armed Services Committee dated 6 Feb 1960, Working Papers 3d QRCM, ATCH 1, 1975.
4. Defense Study of Military Compensation, Vol 1, Section 6, 1962.
5. Senate Report No. 387, accompanying H.R. 5555, 88th Congress, 1st Session, pp. 29-30.
6. Ibid.
7. Report and Staff Studies of the Third Quadrennial Review of Military Compensation, "Military Compensation: A Modernized System," Working Paper, Officer Responsibility Pay, 1976.
8. The Congressional Record - Senate, 85th Congress, 2d session, p. 6831, March 25, 1958.

Other Sources

Compensation Elements and Related Manpower Cost Items Their Purpose and Legislative Background, Military Compensation Background papers, Second Revised Edition, Office of the Secretary of Defense, July 1982.

SUMMARY OF RESPONSES

Responsibility Pay

Issues: 1. Pay to be continued.

2. Extend pay to W-1 through W-4 and O-1/O-2 grades and limit payment to 5% of the personnel in each of these pay grades.

3. Set monthly rates of \$50 for O-1, O-2 and W-1 through W-4; \$75 for O-3 and O-4; \$150 for O-5 and \$200 for O-6.

<u>Service</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Marine Corps	Concurs.
Air Force	Concurs.
Coast Guard	Concurs.
PHS	Concurs.
NOAA	Concurs.
JCS	Concurs.

LEGISLATIVE IMPLICATIONS

Responsibility Pay

1. Amend 37 U.S.C. 306(a) to include active duty officers in pay grade W-1 through W-4, O-1/O-2 at \$50 per month and to increase the rate for O-3/O-4 to \$75, O-5 to \$150, and O-6 to \$200.
2. Amend 37 U.S.C. 306(c) to include not more than 5% active duty officers in pay grades W-1 through W-4, O-1/O-2.

V. RELATED ISSUES

- A. Multiple Pays: During the course of the S&I Pay review it was found that in a number of cases individuals can draw concurrently two or more S&I Pays for the same or related skills. Whether or not receipt of two or more S&I Pays is really necessary to acquire and maintain force management levels became an issue. A detailed discussion of this issue appears on page 801.
- B. Wartime Considerations: Statutes providing authority for several S&I Pays allow for suspension of payments during wartime or periods of national emergency; some may be suspended by the President while others may be abolished by the military Secretary concerned. Still others are terminated by law on a specific date. To assure objectivity and consistency in the administration of S&I Pays, the Services were asked for their official position in determining which S&I Pays should logically be paid to members during wartime. A complete discussion of this issue is located on page 821.
- C. Quality: The 5th QRM's review and evaluation of the S&I Pays was not based solely on cost and the ability to meet manning authorization requirements. The S&I Pays must also be assessed in terms of their capability to attract and retain the kinds of people who possess the physical, moral, professional, and leadership traits or capabilities necessary in an effective fighting force. A detailed discussion of this issue is found at page 837.
- D. Officer/Enlisted Differential: During the review of the Hazardous Duty Incentive Pays, the 5th QRM found no sound basis for retaining a differential rate of payment for officer and enlisted personnel receiving certain Hazardous Duty Incentive Pays. These pays were viewed primarily as an incentive for assumption of a more dangerous type of skill but not as an attempt to quantify the value of a life or an absolute level of risk. Hence, the QRM position was to eliminate the differential since both officer and enlisted personnel were experiencing similar risks. A discussion of this entire issue appears on page 921.

MULTIPLE PAYS

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THE MULTIPLE S&I PAY ISSUE

I. PURPOSE. During the initial QRMCM review of Special and Incentive (S&I) pays it became apparent that some occupations were targeted for receipt of more than one pay--sometimes because an individual performs multiple hazardous duties and sometimes due to a severe shortage in certain skills. In the past, Congressional or Presidential Executive Orders have placed limitations on multiple payments. In addition, when addressing problems of the military compensation system, frequently the focus is on extremes in receipt of multiple pays. The issue is further complicated by an apparent misunderstanding regarding the difference between a pay and an allowance. The purpose of a pay is to compensate an individual for services rendered (e.g., Basic Pay) or expected to be rendered (e.g., Selective Reenlistment Bonus). An allowance, on the other hand, is a reimbursement to the individual for costs incurred as a result of performing official duties, not income; for example, travel costs associated with executing Permanent Change of Station (PCS) orders or Temporary Duty (TDY) orders, or establishing and maintaining a household when government quarters are not available.

The purpose of this study was to determine the extent to which the Services rely on the multiple use of the S&I category of pays within individual occupational skills, and whether these payments are necessary and appropriate to acquire and maintain these skills at stated force management levels.

II. DATA SOURCES. The majority of the data were derived from calendar year 1982 automated finance records provided by the Service Staffs of the Army, Navy, Marine Corps and Air Force. The other Services' pay records are not computer based and, therefore, could not be used in this study. Additionally, comments solicited from all the Uniformed Services, applicable 5th QRMCM S&I Issue Papers, Executive Orders, and governing legislation and Service Regulations were reviewed.

III. METHODOLOGY. This study was conducted in two phases. In the first, the issue is clearly defined and quantified. In phase two, it was determined whether the multiple pay condition (MPC) identified and measured in the first phase is desirable. This was achieved by evaluating the specific career fields involved in terms of manning, continuation behavior, private sector draw, and projected requirements as addressed in the respective issue papers and Service comments.

IV. ANALYSIS.

A. IDENTIFY AND QUANTIFY. In the first step of this phase, a multiple pay condition (MPC) was defined to be any occurrence of an individual receiving two or more Special and Incentive (S&I) pays during the same calendar year. This meant that if an enlisted member received a Selective Reenlistment Bonus (SRB) in January 1982 and was awarded Hostile

Fire Pay (HFP) for the month of September in that same year, an MPC was considered to have existed. However, pays like HFP are not skill-specific, i.e., all individuals performing duty in the designated hostile fire zone would qualify for the pay irrespective of their career-field. The fact that a recipient of such a pay might also receive another S&I pay during the year is purely coincidental. Therefore, the next step in the analysis restricted the MPC definition to include only the following skill-specific pays:

- Aviation Career Incentive Pay (ACIP)
- Aviation Officer Continuation Pay (AOCP)
- Nuclear Officer Continuation Pay
- Nuclear Officer Annual Incentive Bonus
- Nuclear Officer Accession Bonus
- Submarine Duty Pay
- Enlistment Bonus (EB)
- Selective Reenlistment Bonus (SRB)
- Proficiency Pay
- Diving Duty Pay (DP)
- Hazardous Duty Incentive Pays (all)
- Dental Officer Continuation Pay
- Dental Officer Special Pay
- Veterinarian Special Pay
- Optometry Special Pay
- Medical Officer Board Certification Pay (BCP)
- Medical Officer Incentive Pay
- Medical Officer Additional Special Pay
- Medical Officer Variable Special Pay

The following S&I Pays were not considered skill-specific:

- Career Sea Pay (CSP)
- Hostile Fire Pay (HFP)
- Responsibility Pay
- Special Duty at Certain Places Pay
- Overseas Duty Extension Pay

While a distribution of the frequency of MPCs by Service and grade is of interest, a raw number in itself is not particularly meaningful. Therefore, the third step was to express these values in terms of each Service's end strength as of November 1982 in an effort to measure the magnitude of the situation. Table 1 is a summary of the number of multiple S&I recipients (MPCs) 1982 with respect to their parent Service's officer, enlisted and overall end strengths. The detailed frequency distributions by grade for each Service from which these values were derived are contained in Appendix A. Table 2 documents the end strengths used in the percentage calculations for Table 1. It should be noted that the MPCs displayed in Table 1 were generated from a review of the automated finance record of each individual on active duty any time during

calander year 1982. Since end strengths are snapshots in time while the number of multiple pay recipients is cumulative, and it was not necessary for the persons to be receiving two or more S&I pays simultaneously to be considered a MPC, these percentages are likely to be high. Nevertheless, the relatively common belief that a significant percentage of military personnel are receiving several different S&I pays for performing the same or related task is unsubstantiated.

Column 1 of Table 1 represents the number of individuals who received two or more S&I pays during the year, irrespective of type. Column 2 figures include only those persons who received two or more skill-specific S&I pays. Columns 3 through 5 further categorize these same personnel by the actual number of skill-specific pays received. As can be seen, the resultant values are relatively consistent across Service lines with the exception of the Navy. Therefore, the Navy is addressed separately in a subsequent section of this analysis.

1. Army, Marine Corps and Air Force. Even when including all types of S&I Pays, less than 5% of any of these Services' total members received multiple S&I payments. Eighty-one percent of all the multiple S&I recipients (including Navy) were enlisted members. Eighty-four percent of them were in pay grades E-3 through E-6, indicating that the major beneficiaries of this practice are mid-grade enlisted members who have been identified in previous studies as requiring monetary incentives to continue in either their skill categories or in the Service in general.

Columns 2 through 5 of Table 1 more clearly describe the true multiple S&I Pay situation. Again excluding the Navy, less than one percent of all enlisted personnel received two or more skill-specific S&I pays. Further, 76% of them fall in the "Only 2" category (Column 3). A disproportionate number of officers earned multiple skill-specific pays (ranging from 4.5% to 10.5%); however this is explained by the fact that dentists, physicians and aviators, all of whom are targets of more than one, though quite different S&I pays, are exclusively officers. For example, 99% of all Marine Corps officers identified received "Only 2" skill-specific pays, AOCIP and ACIP. Nearly all of the officers appearing in Columns 4 and 5 are medical practioners. For this reason, the Marine Corps, which has no Medical Corps of its own, shows less than one-tenth of one percent of its personnel in these multiple pay categories. It is clear from these ratios that the magnitude of the multiple pay situation is significantly smaller than generally perceived.

Table 1
Number of Multiple S&I Recipients
with Respect to End Strength

Service	Column 1			Column 2			Column 3			Column 4			Column 5		
	2 or More S&I Irrespective of Type			2 or More Skill- Specific S&I's			Only 2 Skill- Specific S&I's			Only 3 Skill- Specific S&I's			4 or More Skill- Specific S&I's		
	Off	Enl	Overall	Off	Enl	Overall	Off	Enl	Overall	Off	Enl	Overall	Off	Enl	Overall
ARMY	8,709 8.4%	29,860 4.4%	38,569 4.96%	4,627 4.5%	4,352 0.6%	8,979 1.2%	2,317 2.2%	4,315 0.6%	6,632 0.9%	1,798 1.7%	37 0.0%	1,835 0.2%	514 0.5%	-	505 0.5%
USAF	4,608 4.5%	17,189 3.6%	21,797 3.76%	3,020 3.0%	2,136 0.4%	5,156 0.9%	932 0.9%	1,798 0.4%	2,730 0.5%	1,535 1.5%	287 0.1%	1,822 0.3%	553 0.5%	51 0.0%	604 0.1%
USN*	21,082 31.6%	106,022 22.2%	127,104 23.4%	12,755 19.2%	15,490 3.2%	28,245 5.2%	11,189 16.9%	12,610 2.6%	23,799 4.4%	1,549 2.3%	2,202 0.5%	3,751 0.7%	17 0.0%	678 0.1%	695 0.1%
USMC	1,985 10.5%	3,140 1.8%	5,125 2.6%	1,981 10.5%	900 0.5%	2,881 1.5%	1,963 10.4%	885 0.5%	2,848 1.5%	18 0.1%	15 0.0%	33 0.0%	-	-	-

*Adjusted for change in Diving Pay Policy

Table 2
DoD End Strengths - November 1982*

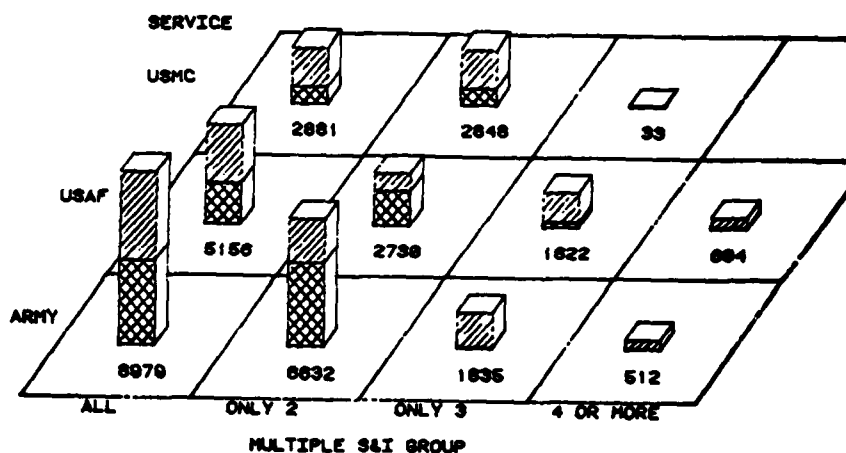
	<u>Officer</u>	<u>Enlisted</u>	<u>Total</u>
Army	103,232	673,600	776,832
Navy	66,365	476,768	543,133
Marine Corps	18,922	175,185	194,107
Air Force	102,328	477,856	580,184
DoD	290,847	1,803,409	2,094,256

*Excludes Cadets and Midshipmen

Figure 1 demonstrates graphically how the number of multiple skill-specific S&I pay recipients drops dramatically between the "Only 2" and "Only 3" groups. The relationship between the officer and enlisted totals is dependent upon the structure and mission of the given Service. For example, the Air Force is a flying service; therefore, their officer-to-enlisted ratio is much higher than the Army which is largely a ground force. This results in Air Force officers representing a higher percentage of the multiple skill-specific recipients (ALL) for their Service (58.6%) than do Army officers (51.5%). The officers appearing in the "Only 3" and "4 or More" groups of these Services are almost exclusively Medical Officers. As was shown earlier, most of the Marine Corps recipients were officers paid both ACIP and AOCIP. This explains the virtual discontinuance of the MPC in the Marine Corps beyond two.

Figure 1

SKILL-SPECIFIC S&I RECIPIENTS



2. **Navy.** There are, in effect, three arms of this Service (surface, subsurface and air). This diversification of the Navy's mission, coupled with the existence of an element common to all arms, sea duty, results in what is often interpreted to be an inordinately high utilization of multiple S&I pays. However, if one removes the influence of Career Sea Pay (CSP) and other nonskill-specific pays, the percentage of Navy end strength receiving more than one S&I pay (Table 1, Column 1) drops from 23.4% to 5.2% (Column 2). Although this is a smaller proportion than generally believed, it is still high in comparison to the other Services.

Table 3 decomposes the Navy entry in Table 1 into the four occupational groups which were found to be most S&I pay-intensive. (The detailed frequency distributions for each of these skills are in Appendix B.) It demonstrates that, contrary to appearances, the use of multiple S&I pays by the Navy is not particularly wide-spread. As can be seen in Column 1, the largest group represented are Submariners, 80% of whom were enlisted members, a group who are not found in any other Service. Another 2,878 of the 28,245 skill-specific recipients were divers. Navy divers represent approximately 90% of all divers DoD-wide. Sixty percent of Navy divers are SEALs who also perform parachute and demolition duties.

Originally, Diving Duty Pay (DP) recipients were prohibited from concurrently earning DP and any of the HDIPs. Consequently, most chose to draw the two HDIPs, parachute and demolition duty, which was allowable, rather than only DP. However in July 1982, DP rates were significantly increased and the law was changed to make DP recipients eligible to receive DP and one HDIP simultaneously. Most divers elected this option. Because the MPC logic counted these individuals as having received three S&I pays (Diving, Parachute and Demolition Duty) the initial frequency distribution for the Navy in this category was artificially high. Therefore, the Navy data (unless indicated otherwise) was adjusted in recognition of the fact that this was a one-time occurrence in that these recipients simply replaced one pay with another. The largest officer community receiving two or more skill-specific S&I pays is Aviation. If one examines Columns 2 and 3, it becomes evident that the cause for this is the combination of ACIP and AOCIP. That is, all but 13 of the 6,585 Naval Aviators earned "Only 2" S&I pays. AOCIP was authorized for the Navy and Marine Corps due to severe aviator shortfalls peculiar to those Services at that time. The existence of two skill categories, nearly exclusively Navy, and a third experiencing unique manning difficulties inflate the percentage of Navy personnel receiving multiple S&I payments in respect to that of the other Services. The effect of the Medical/Dental group is similar to that observed for the Army and Air Force.

Table 3
Frequency Distribution of Navy Multiple Skill-Specific
Pay Recipients According to Skill Group

Skill Group	Column 1			Column 2			Column 3			Column 4		
	2 or More Skill-Specific S&I			Only 2 Skill-Specific S&I			Only 3 Skill-Specific			4 or More Skill-Specific		
	Off	Enl	Overall	Off	Enl	Overall	Off	Enl	Overall	Off	Enl	Overall
Submarine Duty	1,689	7,385	9,474	1,816	6,303	8,119	73	1,282	1,355	-	-	-
Diving Duty	403	2,475	2,878	281	1,234	1,515	122	920	1,042	-	321	321
Medical/Dental	3,878	-	3,878	2,520	-	2,520	1,341	-	1,341	17	-	17
Aviation	6,585	-	6,585	6,572	-	6,572	13	-	13	-	-	13

Eighty percent of all Navy multiple skill-specific S&I recipients (100% of the officers) fall within these four skill groups. Table 4 displays the results of removing these skill groups from both the number of MPCs and end strength (except Medical/Dental whose program is not unique to the Navy). The Navy officer percentage overall (Column 1) is thereby reduced from 31.6% to 6.7% and the enlisted percentage drops from 22.2% to 1.1%. Consequently, when adjusting for Navy-unique career fields, the Navy use of multiple S&I pays is consistent with that of the other Services.

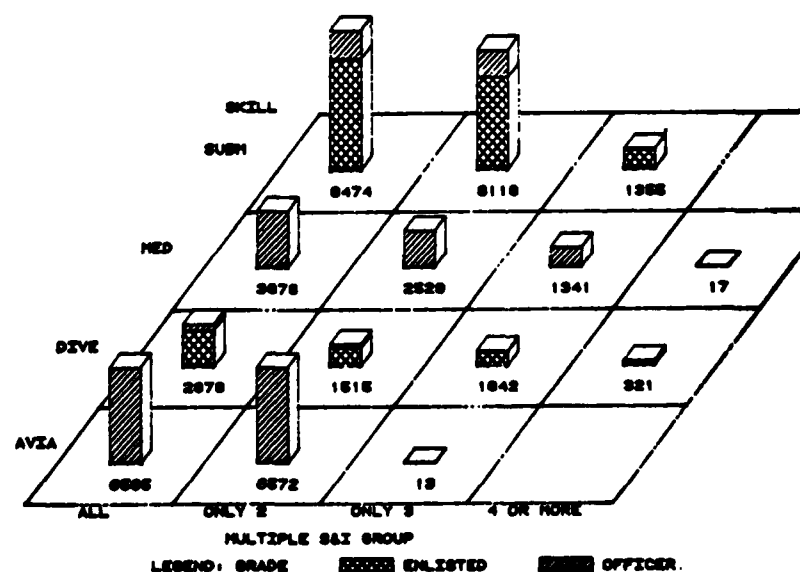
Table 4
Effect of Navy-Unique Career Fields
on the Frequency of Multiple Skill-Specific Payments

	Column 1			Column 2			Column 3			Column 4		
	2 or More Skill-Specific S&I			Only 2 Skill-Specific S&I			Only 3 Skill-Specific			4 or More Skill-Specific		
Original:	Off	Enl	Overall	Off	Enl	Overall	Off	Enl	Overall	Off	Enl	Overall
Recipients	12,755	15,490	28,245	11,189	12,610	23,799	1,549	2,202	3,751	17	678	695
% strength	19.2%	3.2%	5.2%	16.9%	2.6%	4.4%	2.3%	0.5%	0.7%	0.0%	0.1%	0.1%
Adjusted:												
Recipients	3,676	5,430	9,308	2,520	5,073	7,593	1,341	-	1,341	17	357	374
% strength	6.7%	1.2%	1.7%	4.4%	1.1%	1.4%	2.0%	0.0%	0.2%	0.0%	0.1%	0.0%

Figure 2 is a visual display of the Navy skill frequency distribution. Clearly, in those general career fields which are comprised of both officers and enlisted, the enlisted members are the predominant recipients. The utilization of more than two S&I pays for officers, for all practical purposes, occurs only in the medical fields.

Figure 2

NAVY SKILL-SPECIFIC S&I RECIPIENTS



B. QUALIFY OR JUSTIFY. In paragraph A it was shown that, while all the Services utilizes multiple skill-specific S&I pays to some extent, no Service relies upon this procedure to the magnitude generally thought. However, that does not mean that the practice is appropriate and necessary for the Services to achieve their force management objectives. That issue is addressed below.

If monetary incentives are to serve as a basis for an an effective attraction and retention program they must possess the following characteristics at a minimum:

1. That they be paid only when attraction and retention problems exist;
2. That they be sufficiently flexible to adequately address changes in the nature of the problem (e.g., sudden growth in requirements, new career field created, etc.) without immediate amending legislation; and
3. That the minimum amount necessary to effect the desired change in behavior is paid (i.e., that the level of payment be predicated upon the type and magnitude of the problem).

The recently completed QRM review of proposed and existing S&I pays demonstrated that, in all but a few instances to be discussed later, multiple S&I pay authority is neither undesirable nor abused. In fact, in one case it was found that this authority should be expanded.

The combination of non-entitlement type pays such as SRBs, which can be turned on or off as the situation dictates, with long-term, skill-specific pays, e.g., Crewmember Flight Pay, allows for a high degree of flexibility and ensures that expenditures are focused properly. Each S&I layer tends to further define the specific skill group experiencing the problem, thereby increasing the probability that only those individuals who possess the needed qualifications and who require increased compensation to continue are the sole recipients of the additional monies. For example, in the case of Crewmember Flight Pay, the need for an incentive pay for the general occupational category of air crewmember was identified. However, manning problems of each of the encompassed skills were not equivalent. Some specific air crewmember skills (e.g., inflight refueler) were suffering considerably greater shortfalls than were the majority in this category. Rather than setting Flight Pay at a level high enough to solve all crewmember manpower shortages, thereby "overpaying" most to retain a few, another S&I pay layer is added (usually SRB) which is paid only to those who require it. This demonstrates the cost-effectiveness of multiple S&I pays.

The most common enlisted MPC is a combination of SRB or EB and one of the Hazardous Duty Incentive Pays (HDIPs). However, as a consequence of their highly marketable skills and the arduousness of their assigned duties, enlisted nuclear qualified submariners are targets for four S&I

pays; SRB, Submarine Pay, Sea Pay, and Proficiency Pay (Shortage Specialty Pay). In view of the QRMCM recommended changes to SRBs, Submarine Pay and Sea Pay, only the use of Shortage Specialty Pay is considered questionable. On the other hand, the Diving Duty Pay (DP) study identified a number of individuals (both officer and enlisted) who routinely performed multiple hazardous duties but, due to current legislation that restricts DP recipients to one HDIP, were not being compensated for the associated added risks. The QRMCM recommended that divers be authorized to earn up to two HDIPs as are members in other occupational fields.

The same flexibility and efficiency found in the application of multiple S&I pays to enlisted manpower management problems exists for the officer corps. As mentioned in Phase I, officer MPCs generally fall within the Medical/Dental, Aviation, Diving and Nuclear Power/Submarine specialties. Each Pay is designed, and generally used, to address specific problems within the given career field. The existence of numerous S&I pays and the authority to combine them as necessary facilitates the accurate targeting of the S&I monies.

V. FINDINGS.

A. The practice of using varying combinations of S&I Pays is an efficient, cost-effective means of addressing manpower problems, particularly since the character and severity of the problems tend to differ across service and generalized occupational lines.

B. No Service utilizes multiple S&I pay authority to excess.

C. Over 80% of all multiple S&I pay recipients are enlisted members, an overwhelming proportion of whom are in pay grades E-3 through E-6.

VI. RECOMMENDATION. The Services should periodically review their application of multiple S&I payments to ensure that they continue to use them only in cases where this practice is necessary for the achievement of force management objectives.

DISTRIBUTION OF MULTIPLE S&I RECIPIENTS IN CY82
ARMY

NUMBER OF SKILL-SPECIFIC PAYS RECEIVED

GRADE	0	1	2	3	4	5	TOTAL
E01	43	348	186	0	0	0	577
E02	103	1026	701	0	0	0	1830
E03	880	1912	771	0	0	0	3563
E04	4071	2376	461	0	0	0	6908
E05	4090	3027	872	4	0	0	7993
E06	3230	2496	1061	27	0	0	6814
E07	2373	1069	236	5	0	0	3683
E08	815	191	21	1	0	0	1028
E09	152	45	6	0	0	0	203
O01	0	15	3	0	0	0	18
O02	0	65	12	0	0	0	77
O03	0	313	783	294	27	0	1417
O04	5	141	700	727	128	3	1704
O05	6	59	482	446	177	3	1173
O06	0	5	315	318	172	1	811
O07	0	0	2	7	1	0	10
O08	0	0	1	5	0	0	6
O09	0	0	0	1	0	0	1
V01	4	178	5	0	0	0	187
V02	2	190	11	0	0	0	203
V03	3	269	1	0	0	0	273
V04	0	88	2	0	0	0	90
TOTAL	15777	13813	6632	1835	505	7	38569

DISTRIBUTION OF MULTIPLE S&I RECIPIENTS IN CY82
NAVY *

NUMBER OF SKILL-SPECIFIC PAYS RECEIVED

GRADE	0	1	2	3	4	5	TOTAL
E01	18	117	26	2	0	0	163
E02	91	414	67	5	0	0	577
E03	534	1732	177	60	2	0	2505
E04	7862	12155	1483	175	41	10	21726
E05	12602	17316	4527	745	430	46	35666
E06	13816	9951	4035	750	164	16	28732
E07	6636	3825	1588	237	72	4	12362
E08	1421	1126	503	40	28	0	3118
E09	537	379	204	32	21	0	1173
O01	198	194	263	27	0	0	682
O02	359	1071	215	58	0	0	1703
O03	942	1703	3180	450	17	0	6292
O04	998	429	4690	688	23	2	6830
O05	611	538	1612	401	44	0	3206
O06	199	238	488	341	49	3	1318
O07	0	3	4	5	0	0	12
O08	0	0	1	8	0	0	9
O09	0	0	0	1	0	0	1
W02	335	111	19	4	0	0	469
W03	233	70	27	5	0	0	335
W04	65	30	9	1	0	0	105
TOTAL	47457	51402	23118	4035	891	81	126984

* UNADJUSTED FOR DIVING PAY POLICY CHANGE

DISTRIBUTION OF MULTIPLE S&I RECIPIENTS CY82
MARINE CORPS

NUMBER OF SKILL-SPECIFIC PAYS

PAY GRADE	0	1	2	3	TOTAL
E01	2	1	0	0	3
E02	13	9	0	0	22
E03	122	168	9	1	300
E04	221	267	5	0	493
E05	190	592	228	6	1016
E06	52	390	453	6	901
E07	42	144	190	2	378
E08	17	7	0	0	24
E09	3	0	0	0	3
O02	0	0	1	0	1
O03	0	0	698	11	709
O04	0	0	1021	7	1028
O05	0	0	240	0	240
O06	0	2	0	0	2
W01	0	2	2	0	4
W03	0	0	1	0	1
TOTAL	662	1582	2848	33	5125

DISTRIBUTION OF MULTIPLE S&I RECIPIENTS IN CY82
AIR FORCE

NUMBER OF SKILL-SPECIFIC PAYS

GRADE	0	1	2	3	4	5	TOTAL
E01	11	0	0	0	0	0	11
E02	19	3	0	0	0	0	22
E03	663	190	101	27	0	0	981
E04	2025	1540	541	66	11	0	4183
E05	3495	2061	844	109	28	0	6537
E06	2171	599	270	39	9	0	3088
E07	1480	204	41	30	3	0	1758
E08	426	48	1	10	0	0	485
E09	108	10	0	6	0	0	124
O01	0	21	3	0	0	0	24
O02	0	26	13	0	0	0	39
O03	0	452	484	514	16	0	1466
O04	0	461	224	474	119	7	1285
O05	0	328	141	364	176	28	1037
O06	1	298	59	171	146	61	736
O07	0	1	5	8	0	0	14
O08	0	0	1	3	0	0	4
O09	0	0	1	1	0	0	2
O10	0	0	1	0	0	0	1
TOTAL	10399	6242	2730	1822	508	96	21797

DISTRIBUTION OF MULTIPLE S&I RECIPIENTS BY SKILL
NAVY DIVERS *

PAY GRADE	# SKILL-SPECIFIC PAYS			TOTAL
	2	3	4	
E01	3	1	0	4
E02	11	5	0	16
E03	41	58	0	99
E04	107	143	22	272
E05	329	269	330	738
E06	353	245	94	692
E07	226	122	40	388
E08	89	50	13	142
E09	75	38	11	124
O01	29	11	0	40
O02	48	29	0	77
O03	102	43	0	145
O04	53	20	0	73
O05	16	9	0	25
O06	7	1	0	8
W02	6	3	0	9
W03	14	5	0	19
W04	6	1	0	7
TOTAL	1515	1042	321	2878

* ADJUSTED FOR CHANGE IN DIVING PAY POLICY

DISTRIBUTION OF MULTIPLE S&I RECIPIENTS BY SKILL
NAVY PHYSICIANS AND DENTISTS

SKILL-SPECIFIC PAYS

PAY GRADE	1	2	3	4	TOTAL
002	1	0	0	0	1
003	878	73	1	952	
004	781	499	3	1283	
005	452	380	8	840	
006	404	375	5	784	
007	3	5	0	8	
008	1	8	0	9	
009	0	1	0	1	
TOTAL	2520	1341	17	3878	

DISTRIBUTION OF MULTIPLE S&I RECIPIENTS BY SKILL
NAVY SUBMARINERS

SKILL-SPECIFIC

PAY GRADE	1	2	3	TOTAL
E01	6	2	8	
E02	3	0	3	
E03	27	5	32	
E04	272	31	303	
E05	2473	628	3101	
E06	2127	472	2599	
E07	963	136	1099	
E08	318	8	326	
E09	114	0	114	
O01	223	4	227	
O02	166	0	166	
O03	554	49	603	
O04	491	19	510	
O05	275	0	275	
O06	87	0	87	
W02	10	1	11	
W03	9	0	9	
W04	1	0	1	
TOTAL	8119	1355	9474	

SUMMARY OF RESPONSES

Multiple S&I Payments

Issues:

1. The practice of using varying combinations of S&I Pays is an efficient, cost-effective means of addressing manpower problems, particularly since the character and severity of the problems tend to differ across service and generalized occupational lines.

2. No Service utilizes multiple S&I pay authority to excess.

<u>Department</u>	<u>Comments</u>
Army	Concurs.
Navy	Concurs.
Air Force	Concurs.
Coast Guard	Concurs.
Public Health Service	Concurs.
NOAA	Concurs.
JCS	Concurs.

WARTIME CONSIDERATIONS

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SPECIAL AND INCENTIVE PAYS DURING WARTIME

During the course of the review of Special and Incentive (S&I) Pays, it was found that the statutes providing authority for several of these pays also allow for their suspension during wartime or periods of national emergency. These provisions, however, are not consistently applied to all S&I Pays. Some pays may be suspended by the President, one automatically stops upon declaration of war, while for other pays the issue is not addressed. Since this issue was raised by the Navy and J-1, subsequent to one of the 1982 War Planning exercises, several agencies have expressed concern about how these pays would be handled during wartime. Some believe that the continuance/discontinuance of payment during wartime can only be determined once the nature of the scenario is known. Others believe that it is more appropriate to have a plan "on-the-shelf" to preclude "eleventh hour" decisions. The QPMC Staff is a proponent of the latter position.

The QPMC Staff believes that in initial periods of war or national emergency, operators and planners are so involved with the conflict or situation at hand that they should not be expected to turn their attention to making determinations about the payment/non-payment of the various S&I Pays. There are, after all, nearly forty of them. Instead, there should be a plan in existence capable of being implemented within a short period of time that clearly states the required actions for each S&I Pay. This does not mean that all S&I Pays will be discontinued during wartime. It simply means that it may be appropriate to terminate some, fully continue others, reduce payments, etc. These determinations need to be made for each of the S&I Pays since there are a myriad of factors that must be considered, i.e., the various wartime/conflict scenarios, declared or undeclared war, draft versus no-draft, etc. A predetermined plan that has already addressed these issues would go a long way in avoiding confusion during the early phases, and enable planners to make decisions that are both timely and in the best interest of the operation.

The Services were asked to comment on the applicability of all the S&I Pays during periods of war or national emergency. Appendix A contains a breakout of each S&I Pay along with its current wartime payment status and Service comments. The Air Force did not address each pay individually in their response; a summary of their comments appears in Appendix B. As can be seen by the Service responses, there are significant differences among them about the utilization of S&I Pays during wartime; therefore, considerable work is likely to be required to achieve a mutually agreeable position.

It was not possible for the QPMC to adequately analyze the various issues associated with the wartime application of each of the S&I Pays. It is recommended, however, that this task be carried on by a Joint Services Group headed by a representative from the office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics).

SERVICE RESPONSES TO ISSUE OF
SPECIAL AND INCENTIVE PAYS DURING WARTIME

CURRENT STATUTORY STATUS OF PAY IN EVENT OF WAR	STATUTE 37 U.S.C.	SHOULD PAY CONTINUE DURING WARTIME?*
1. AVIATION CAREER INCENTIVE PAY		
President may suspend in time of War	301a	Army - Yes Navy - Yes, necessary to attract and retain adequate numbers of volunteers. Marine Corps - Yes Coast Guard - NC PHS - NC NOAA - Yes JCS - Yes
2. AVIATION OFFICER CONTINUATION PAY		
Statute expired 30 Sep 82 did not address in time of war	301b	Army - No Navy - May not be re- quired during mobili- zation since for reten- tion. Marine Corps - No Coast Guard - NC PHS - NC NOAA - NC N/A JCS - No

* N/C = No comment
N/A = Not applicable

3. SUBMARINE DUTY
INCENTIVE PAY

Termination in war not addressed is subject to regulations prescribed by the President

301c

Army - Yes
Navy - Yes, necessary to attract and retain adequate volunteers
Marine Corps - NC N/A
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - Yes

4. SPECIAL PAY FOR
CAREER SEA PAY

Termination in war not addressed - Is to be under regulations by the President

305a

Army - No
Navy - Yes - Pay reimburses for arduous nature of duty at sea. This would not decrease during wartime, could be expected to increase.
Marine Corps - Yes
Coast Guard - NC
PHS - NC
NOAA - Yes
JCS - Yes

5. SPECIAL PAY FOR
HEALTH PROFESSIONALS

A. Physicians: Variable
Special Pay

Under Regulations prescribed by SECDEF - Does not address time of war Statute for Physicians specifically states that under regulations of SECDEF the SEC'Y of a DEPT may terminate entitlement at any time.

303a

302

Army - Yes - pay in consideration of special skills and training required
Navy - Yes - need doctors will increase. Unless there is a draft, will need for attraction.
Marine Corps - NC N/A
Coast Guard - NC
PHS - Yes
NOAA - NC N/A
JCS - Yes

B. Physicians: Additional
Special Pay

Under Regulations 302
prescribed by SECDEF-
does not address
time of war-
Statute for Phys-
icians specifically
states that under
regulations of SECDEF
the SEC'Y of a DEPT
may terminate
entitlement at any
time.

Army - No
Navy - Yes will need
for attraction unless
a draft
Marine Corps - NC N/A
Coast Guard - NC
PHS - Yes
NOAA - NC N/A
JCS - No

C. Physicians: Board
Certification

Under Regulations 302
prescribed by SECDEF-
does not address
time of war-
Statute for Phys-
icians specifically
states that under
regulations of SECDEF
the SEC'Y of a DEPT
may terminate
entitlement at any
time.

Army - Yes
Navy - Yes - needed
for attraction without
a draft
Marine Corps - NC N/A
Coast Guard - NC
PHS - Yes
NOAA - NC N/A
JCS - No

D. Physicians: Incentive
Special Pay

Under Regulations 302
prescribed by SECDEF-
does not address
time of war-
Statute for Phys-
icians specifically
states that under
regulations of SECDEF
the SEC'Y of a DEPT
may terminate
entitlement at any
time.

Army - No
Navy - Yes - needed
for attraction
without a draft
Marine Corps - NC N/A
Coast Guard - Nc
PHS - NC
NOAA - NC N/A
JCS - No

E. Dentists: Special Pay

Under Regulations
prescribed by SECDEF-
Does not address
time of war - Statute
for Physicians specif-
ically states that
under regulations of
SECDEF the SEC'Y of a
DEPT may terminate
entitlement at any
time.

302b

Army - Yes
Navy - Yes - will
need for attraction
without a draft.
Marine Corps - NC N/A
Coast Guard - NC
PHS - Yes
NOAA - NC N/A
JCS - Yes

F. Dentists: Continuation
Pay

Under Regulations
prescribed by SECDEF-
Does not address
time of war - Statute
for Physicians specif-
ically states that
under regulations of
SECDEF the SEC'Y of a
DEPT may terminate
entitlement at any
time.

311

Army - No
Navy - Yes - will
need for attraction
without a draft.
Marine Corps - NC N/A
Coast Guard - NC
PHS - Yes
NOAA - NC N/A
JCS - No

G. Optometrists:
Special Pay

Under Regulations
prescribed by SECDEF-
Does not address
time of war - Statute
for Physicians specif-
ically states that
under regulations of
SECDEF the SEC'Y of a
DEPT may terminate
entitlement at any
time.

302a

Army - Yes
Navy - Yes - will
need for attraction
without a draft.
Marine Corps - NC N/A
Coast Guard - NC
PHS - Yes
NOAA - NC N/A
JCS - Yes

H. Veterinarians:
Special Pay

Under Regulations
prescribed by SECDEF-
Does not address
time of war - Statute
for Physicians specif-
ically states that
under regulations of
SECDEF the SEC'Y of a
DEPT may terminate
entitlement at any
time.

303

Army - Yes
Navy - Yes - have no
vets but as with
other medical
pays would need
for attraction
without a draft.
Marine Corps - NC N/A
Coast Guard - NC
PHS - Yes
NOAA - NC
JCS - Yes

6. NUCLEAR PAYS

A. Special Continuation Pay

Statute terminates
30 Sep 87 - No
reference to state
of hostilities.

312

Army - No
Navy - Yes - may
need for attrac-
tion and retention
of volunteers.
Marine Corps - NC
N/A
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

B. Career Accession Pay

Statute terminates
30 Sep 87 - No
reference to state
of hostilities.

312b

Army - No
Navy - Yes; may be
necessary to at-
tract and retain
wartime volunteers.
Marine Corps - NC
N/A
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

C. Career Incentive Pay

Statute terminates
30 Sep 87 - No
reference to state
of hostilities.

312c

Army - No
Navy - Yes - may be
necessary to at-
tract and retain
wartime volunteers
Marine Corps - NC
N/A
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

7. PROFICIENCY PAY -
(or the proposed Special
Duty Assignment Pay)

Under regulation
prescribed by
SECDEF and SEC'Y
OF TRANS. - Does
not address time
of war.

307

Army - No
Navy - Yes - re-
quirements will
not decrease in
skills where paid.
Marine Corps - Yes
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

8. SELECTIVE REENLISTMENT BONUS

Temporary statute
expires 30 SEP 84
- under regulations
prescribed by SECDEF
and SEC'Y of Trans.

308

Army - New payments
should be term-
inated if terms
of service extended;
past obligations
should be honored.
Navy - might not be
necessary but con-
sideration should
be given to paying
of obligated anni-
versary payments.
Marine Corps - No
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

9. ENGINEERING & SCIENTIFIC
CAREER CONTINUATION PAY

No expiration date-
Does not address
termination in time
of war - However,
regulations are
to be prescribed
by SECDEF

315

Army - No
Navy - May be re-
quired without a
draft
Marine Corps - NC
N/A
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

10. ENLISTMENT BONUS

Temporary statute
expires 30SEP84
- Regulations
are to be pre-
scribed by SECDEF
and SEC'Y of Trans-
portation.

308a

Army - May be re-
quired until
conscription is
implemented. Past
obligations should
be honored.
Navy - May be re-
quired without a
draft.
Marine Corps - No
Coast Guard - NC
PHS - NC
NOAA - NC/NA
JCS - No

A. Army Bonus

Temporary statute
expires 30SEP84-
Regulations are
to be prescribed
by SECDEF and
SEC'Y of Trans-
portation.

308f

Army - May be re-
quired until Con-
scription is im-
plemented. Past
obligation should
be honored.
Navy - N/A
Marine Corps - No
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

11. FLIGHT PAYS

President may suspend in time of war

301

A. Crew Members

B. Non-Crew Members

C. Air Weapons Control Officer

Army - Yes

Navy - Yes since risks will not decrease

Marine Corps - Yes

Coast Guard - NC

PHS - NC

NOAA - NC N/A

JCS - Yes

12. CAREER FLIGHT DECK DUTY PAY

President may suspend in time of war.

301

Army - Yes

Navy - Yes compensation for additional dangers associated with air operations on ships.

Marine Corps - Yes

Coast Guard - NC

PHS - NC

NOAA - NC N/A

JCS - Yes

13. GLIDER DUTY PAY -
(QRMCM has proposed elimination of this pay)

President may suspend in time of war.

301

Army - Yes - provided the provision for pay is not repealed

Navy - No objection to pay's elimination, if future crews are eligible for ACIP or Hazardous duty Incentive Pay for Aerial Flight.

Marine Corps - NC N/A

Coast Guard - NC

PHS - NC

NOAA - NC N/A

JCS - No

14. PARACHUTE DUTY PAY

President may suspend in time of war

301

Army - Yes
Navy - Yes, the requirements and danger of this duty would increase.
Marine Corps - Yes
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - Yes

15. DEMOLITION DUTY PAY

President may suspend in time of war

301

Army - Yes
Navy - Yes - chance of injury increased during wartime with increased operations
Marine Corps - Yes
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - Yes

16. EXPERIMENTAL STRESS DUTY PAY

A. High/low-pressure chamber

301

President may suspend in time of war

Army - Yes
Navy - Yes - pressure training would increase. Risk associated with all types of stress duties would not decrease.
Marine Corps - NC N/A

B. Human Acceleration/ deceleration
President may suspend in time of war

C. Thermal stress
President may suspend in time of

301

Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - Yes

17. LEPROSARIUM DUTY PAY -
(The QPMC has proposed
elimination of this
pay)

President may suspend in time of
war.

301

Army - Yes - Provided the provision for the pay is not repealed.
Navy - Have no objections to pay being repealed.
Marine Corps - NC N/A
Coast Guard - NC
PHS - No
NOAA - NC N/A
JCS - No

18. DIVING DUTY PAY

President may suspend in time of
war.

304

Army - Yes
Navy - Yes requirements and hazards will increase - required to attract and retain.
Marine Corps - Yes
Coast Guard - NC
PHS - NC
NOAA - Yes
JCS - Yes

19. TOXIC PESTICIDES AND
AND DANGEROUS ORGANISMS

President may sus- 301
pend in time of
war.

Army - Yes
Navy - Yes-
for retention
of experienced
personnel and
increased risks.

20. TOXIC FUELS & PROPELLANTS 301

Marine Corps - NC N/A
Coast Guard - NC
PHS - No (Toxic
Pesticides &
Dangerous Or-
ganisms)
N/C (Fuels)
NOAA - NC (N/A)
JCS - Yes

21. HOSTILE FIRE PAY

Not effective in 310
time of war de-
clared by Congress.
Regulations are
to be prescribed by
SECDEF.

Army - Yes
Navy - Yes during
undeclared hos-
tilities - No,
during full mobil-
ization because
practically all
members may be
subject to
hostile fire.
Marine Corps - Yes
should be permitted
during wartime with
law change.

Coast Guard - NC
PHS - NC
NOAA - No
JCS - No

22. SPECIAL DUTY AT CERTAIN
PLACES PAY (FOREIGN DUTY)

Under regulations 305
prescribed by the
President - Does
not address time
of war.

Army - No
Navy - No unless
modified into an
isolated duty pay
for arduous lo-
cations, then yes.
Marine Corps - Yes

22. Cont.

Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

23. OVERSEAS DUTY EXTENSION
PAY

Under regulations
prescribed by
Secretary of Service
concerned - Does not
address time of war.

314

Army - No
Navy - Yes-is a
cost savings
program to re-
duce long term
PCS expenses.

Marine Corps - Yes
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

24. RESPONSIBILITY PAY

Under regulations
prescribed by SECDEF
and SEC'Y of TRANS
- Does not address
time of war.

306

Army - Yes
Navy - Yes - since
the burdens of the
sea going commander
will be increased.

Marine Corps - NC N/A
Coast Guard - NC
PHS - NC
NOAA - NC N/A
JCS - No

25. FAMILY SEPARATION
ALLOWANCE (Type II)

Not payable in time
of war or national
emergency declared
by Congress.

427

Army - Yes
Navy - Yes
understands
requirement
to delete
entitlement
Marine Corps - Yes,
should change
law to permit
payment.

Coast Guard - NC
PHS - NC
NOAA - No
JCS - No

SUMMARY OF THE AIR FORCE POSITION REGARDING
THE PAYMENT OF S&I PAYS IN TIME OF WAR

- S&I Pays attract and retain quality and quantity for readiness and recognition of hazards
- basis for payment equally applicable as in peacetime and warrants continuation during armed conflict
- several factors require evaluation before any decision to suspend any S&I Pays
 - negative impact on morale, e.g. aviators make financial commitments based on total compensation - these don't cease in times of conflict
 - certain S&I Pays are more combat related than others
 - military members are accustomed to "on/off" nature of bonuses but view S&I Pays as having some permanence
 - relative importance of some skills may change dramatically during conflict
 - S&I Pays have been continued in limited conflicts
 - during conflicts, experience shows that certain critical career fields remain difficult to fill or new such career fields may appear
 - may be justification to treat careerists differently from inductees in view of need for career force after conflict
- infinite combinations of armed conflict can occur
 - the nature of the conflict and draft/no draft situation will help dictate which S&I Pays will be appropriate
 - should not limit flexibility by predetermining for a scenario that has not yet occurred.
 - the range of possibilities will require different leadership decisions regarding personnel utilization which will influence compensation policy, i.e.,
- we would not eliminate Sea Pay in a limited naval action or ACIP in a military action predominately involving air combat
- Summary: Air Force position generally is to continue S&I Pays in armed conflict unless overriding considerations of National policy militate against doing so - no need for a major legislative initiative to consolidate or modify the authority to suspend payment of S&I Pays in time of war is seen

QUALITY

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QUALITY

I. PURPOSE. The purpose of this review is to initiate an assessment which would determine what impact Special and Incentive Pays have or should have on quality force considerations.

II. DATA SOURCES. The primary sources of information used in this discussion were data received from the Services and data derived during the analysis of the individual Special and Incentive (S&I) Pays. Other sources of information included the computerized information base of the Defense Manpower Data Center (DMDC) and assorted Department of Defense (DoD) studies, briefings, and reports. Although not a primary data source, field interviews were conducted at several locations encompassing sites from each of the DoD Services and the Coast Guard.

III. BACKGROUND. The capabilities, abilities and skills of its military personnel are a matter of concern to any society. The level of concern, however, fluctuates as a function of historical events. In the United States, the end of the draft in 1972 marked the beginning of a period of increased interest in, and concern about, the "quality" of our Armed Forces. The interest arose primarily because of the need to replace draftees and draft-motivated enlistees with volunteers and, after considerable training investment, to retain those volunteers. Discussions of attraction and retention have been complicated by two somewhat independent positions. First, there has been an assumption that the proper mix of capabilities, abilities and skills had existed prior to the all-volunteer force. It has been stated that the present "quality" profile should be, at minimum, similar to that of an earlier era. Second, there has been the assumption that, as a result of the increasing complexity of military weapons systems, personnel possessing different capabilities, higher abilities and more technical skills may now be required. Thus, it has been suggested that a compatibility between weapons systems and personnel may not exist with our current "quality" profile and that it needs improvement.

Depending on the context, and the particular perspective of an observer, definitions of "quality" differ. Above, "quality" was equated, in a general sense, with "capabilities, abilities and skills." If faced with providing measurements for each of these terms, discussions tend to move from quantitative to qualitative terminology. Even in examining the qualitative terminology, we find differences in opinion about the static, as opposed to dynamic, nature of "quality." Some commentators prefer to assume that "quality" is an individual attribute, constant over time; others assume that training and proper leadership can bring about change in "quality."

Among quantitatively-oriented observers, the word "quality" has generally been reserved as a descriptive term for personnel upon entry into the Armed Forces, and has been measured in terms of scores on the Armed Forces Qualification Test (AFQT) and educational level. For personnel in the military, AFQT and educational level have been supplemented by a myriad of measures, including promotion rates, on-the-job performance

measures, experience levels, and rates of indiscipline. While quantifiable, each of these measures presents analytic difficulties (some of which will be discussed later in this paper).

IV. **METHODOLOGY.** The 5th QRCM review and assessment of the individual Special and Incentive Pays dealt with "quality" considerations only indirectly. This was not by choice; rather, as a result of a recognition, which emerged in the course of the analysis, that there are few, if any, direct relationships between S&I Pays and quality. The Services control their own "quality destiny" through various force management devices. These include Service-specific entry standards, promotion systems, and policies governing reenlistments and/or discharges. The S&I Pays are viewed as a management tool -- one which is used to "fine tune" the system, after other management techniques have been employed.

In reviewing the S&I Pays, the 5th QRCM assessed each one to determine if whether it was appropriate as an attraction or retention tool and if whether the level of pay was appropriate. Ideally, desired quality distributions would have been available for each occupational group eligible for S&I Pays, together with precise definitions for the components of quality. Unfortunately, these distributions are available only by inference, and are generally identified in terms of quantity, not quality.

To determine properly what impact S&I Pays have, or should have, on quality force considerations, data well beyond the scope of the present review would have to be assembled, analyzed and presented. The present effort can only provide a start. In this review we indirectly superimpose, on the individual papers which have preceded this one, a sketch of some of the more commonly accepted quality measures and their distributions in the force during the past several years. Optimally, the next step in an analysis would be a more direct comparison of trends in quality with trends in specific pays. If, as we suspect is the case, there are few observable relationships, the analysis would then try to determine if, and how, such relationships should exist.

In the remainder of this section, we first provide justification for restricting the subsequent analyses to enlisted personnel. Then, we review several pays which might be used as direct management tools with which to influence quality distributions. (For the present, "quality" is defined as capabilities, abilities and skills which can be measured in a quantifiable manner.) Finally, we present the factors to be discussed in the analysis.

A. STUDY POPULATION.

This issue paper primarily discussed enlisted personnel for several reasons. First, the capabilities of enlisted personnel, about 85 percent of the active force, have been the focus of greatest continuing concern in "quality" discussions. Second, more data, for a broader range of indicators, exist for enlisted personnel than for officers. In addition, data for enlisted personnel is more heterogeneous than for officers. For

example, the 1982 DoD commissioned officer force was comprised of 96.9 percent college graduates (as compared to 72.9 percent in 1967).¹ While not all readers will agree with the enlisted force quality indicators reported in this review, sufficient data were available to provide comparable trend data across all Services. Similar data are not available for officers. At times, the available data included officers and was used in preference to no information.

The exclusion of officers is not to say that, within the Services, officer quality problems are non-existent. Quite the contrary. In certain fields the Services are very concerned about quality. For example, the "Findings and Recommendations" of the Report of the DoD-University Forum Working Group on Engineering and Science Education (July 1983) stated, inter alia, "DoD also faces a range of related quality problems, primarily centering on the ability to recruit and retain high quality S&E's [scientists and engineers] for civilian and military positions."² The Army Science Board, 1982 Summer Study: Report of Panel on Science and Engineering Personnel (November 1982), in addressing commissioned officers stated,

...it is very difficult to attract high-quality individuals who have a strong technical interest as well as a desire to make a career in the Army.³

The Board concluded that quality was a much more severe problem than quantity.⁴ A year ago, the Air Force implemented the recently authorized Engineering and Scientific Career Continuation Pay to retain career officers and thereby address quantity problems. However, during field interviews comments indicated that the quality problems remain unsolved.

The Navy has experienced difficulty in attracting the desired quality of personnel for nuclear power training. Refusing to compromise, in the past, on quality has resulted in a shortage of nuclear submarine officers. The pre-screening of officers, compared to enlisted personnel, provides yet another reason for this review's focus on enlisted personnel. Officers of all Services undergo extensive pre-screening prior to acceptance into academy, ROTC or officer candidate programs. The lengthy academy and ROTC programs allow for additional screening. The Services also require another screening and an intensive observation period upon commissioning, prior to entry into many career fields. This extensive pre-screening alleviates much of the officer quality problem.

B. APPLICABLE S&I PAYS.

There are several Special and Incentive Pays which, if properly used, offer the Services some "pay" tools to assist in obtaining and maintaining quality personnel. Some of these can be used to bear more directly on quality than others.

1. Officer S&I Pays.

a. Nuclear Officer Accession Bonus. This bonus is used to attract personnel to the nuclear field. In that sense, it is directly related to quality since applicants must be highly trained, skilled and motivated. The screening process for entry into the field is so strict that it could be termed as the identification of a few individuals among mainly high quality applicants.

b. Medical Officer Board Certification Pay. This S&I Pay is directly related to quality because to receive it a physician must pass oral and written examinations (and in some specialties evaluations of operating room techniques). Similar to examinations for entry, medical specialty boards measure knowledge but do not relate necessarily to on-the-job performance.

c. Medical Officer Incentive Special Pay. As this pay is currently implemented, some Services have a review board to verify attainment of a minimum level of on-the-job performance prior to receipt of this pay. Thus, the pay is, in those cases, directly related to quality.

d. Responsibility Pay. This is paid to Commanding Officers of Navy and Coast Guard ships. Since there is extensive screening for command, it can be said that this pay is related to quality--but only very indirectly.

2. Enlisted S&I Pays.

a. Enlistment Bonus. This is the pay most directly related to quality of personnel in the Services. The Enlistment Bonus, when authorized in 1972 with the advent of the all-volunteer force, was for attracting volunteers only to the combat arms areas. It has since evolved to a bonus directly related to quality in both combat arms and technical areas. The payment is dependent generally upon approval to enter certain shortage fields based upon physical, aptitude and moral qualifications, some of which are determined by aptitude test scores. The bonus is paid after successful completion of training for the specialty but is, of course, unrelated to follow-on performance.

b. Selective Reenlistment Bonus. This S&I Pay is indirectly related to quality since the bonus goes to all personnel in a particular MOS, rating, or specialty which is experiencing shortages. It is useful as a tool in retaining quality personnel only if sufficiently high standards to qualify for reenlistment are established and maintained. Presumably these standards are based upon on-the-job performance evaluations and may not be related to the criteria applied for entry into the field.

c. Proficiency Pay. This pay was intended to give the Services an additional management tool in meeting the competition for critical skills. As implemented, only one aspect of the pay was directly

related to quality and only the Coast Guard uses that category of Proficiency Pay (Superior Performance Pay) for those personnel exhibiting a high degree of effectiveness in the performance of duties. (Currently only 32 personnel receive this pay and the QRMC has recommended that the Coast Guard make these payments under the proposed Special Duty Assignment Pay.) Other Proficiency Pay provisions are at best indirectly related to quality, since the money is intended as an inducement for quality personnel to volunteer for special duty assignments or for fields short of personnel. However, payments are not based on quality; they are based on performance of the minimum requirements to remain assigned to the position qualifying for the pay.

Of course, other Special and Incentive Pays go to personnel who must meet stringent Service requirements prior to entering a program and becoming entitled to the particular pay (e.g., Aviation Career Incentive Pay or Diving Duty Pay).

C. FACTORS TO BE EXAMINED.

As indicators of current Service quality and of quality requirements, there are several factors worthy of examination. Among them are:

- Educational attainment of entrants, including the number of high school graduates accessed.
- Results of scores on the Armed Forces Qualification Test (AFQT), shown by aptitude (AFQT) category distributions in and among the Services.
- Experience level in the Services -- measured by the percent of the enlisted population with more than four years of military service.
- Aggregate population stability -- measured as personnel stability across all Services by comparing inventory changes between years; i.e., measuring those who remained in the force.
- Unit personnel stability of the enlisted force -- measured by comparing unit inventory changes between years; i.e., those who remain from year-to-year.
- State of discipline within the Services -- measured by examining incidence rates of courts-martial, desertions, unauthorized absences (AWOL), and non-judicial punishments.

There are several factors commonly considered as indicators of personnel quality which are not reviewed here. One of these is the mission readiness over time of our military forces. Some would observe that this is the only meaningful indicator -- the proverbial "bottom line." We agree that this is a paramount factor in our defense posture. However, we also believe that readiness information, much of which is classified, is more

properly provided to Congress through existing channels and reports. As will be seen, some unclassified data from readiness reporting are used as quality indicators in this review.

Other indicators of quality not included in this review are performance evaluations and promotion history. After entry and initial training, the individual's on-the-job performance is key--this is recognized and reinforced by the Services' promotion systems. Both of these have been excluded for different reasons. Performance measures have varied over time and across Services, both within and between fields. At present, a common measure is not available. A careful consideration of promotion data would entail an unravelling of changes in promotions systems in the past decade. Apart from its complexity, it has not been undertaken due to the fact that few Services maintain promotion data at a level of detail that lends itself to this type of analysis.

Although all of the Uniformed Services responded to the data request for this review, only the four DoD Services are discussed. Since the review focuses on enlisted personnel, the NOAA Corps and Public Health Service are automatically excluded (they have none). In addition, the automated files of the Defense Manpower Data Center (DMDC) used in the analysis do not contain data for non-DoD Services; hence, the exclusion of the Coast Guard.

With the above qualifiers, the next section will first discuss Service responses to the data requests on quality. The quality indicators will then be examined and data review or analysis presented.

V. ANALYSIS.

A. SERVICE RESPONSES TO DATA REQUESTS. As is self-evident, each of the Services have differing missions and assorted personnel requirements. Of necessity, they develop and implement their own quality requirements. A common theme among them, however, is the requirement for technical skills; the Navy and Air Force require about 50 percent of their personnel in technical skills, the Army about 40 percent and the Marine Corps about 30 percent. As has been discussed in other papers in this volume, S&I Pays are used as a management tool in many of these skills. The relationship of Special and Incentive Pays to the quality standards of personnel in both technical and non-technical skills is, at the present, somewhat tenuous.

The Services were asked to provide measurement indicators of quality and their estimates of key factors to be used by the QRM in determining a measure of effectiveness for the Special and Incentive Pays. In response, the Army stated that they use Special and Incentive Pays as a recruiting incentive and to complement other management initiatives. Presently they are not adversely constrained in using these pays to assist in the force alignment process. However, to achieve and maintain their desired AFQT category distribution, the Army states that additional incentive resources will be required as well as either legal clearance or

legislative authority to target Selective Reenlistment Bonuses (SRB) by aptitude within certain MOSs. The desired AFQT distribution or a methodology for its derivation have not been provided.

The Air Force indicated that they do not anticipate any difficulties in meeting Congressionally mandated quality constraints in the short-term, provided appropriation of adequate recruiting resources is forthcoming. However, they are concerned that no cushion of quality and experience exists should an improving economy and adjustments in compensation or retirement programs drive personnel into the massive exodus experienced in the late 1970's.

The Marine Corps stated that in the late 1970's they had an unacceptable number of low quality Marines. This was measured by the large percentage of accessions who scored in Category IV on the Armed Forces Qualification Test (AFQT), the large percentage of non-high school graduates, high rates of unauthorized absentees and excessive attrition prior to the end of enlistments. In the last two years these trends have been reversed by emphasizing quality enlistments and discharging "undesirables," or low performers. The Marine Corps intends to retain its quality standards.

The Navy provided the following indicators that they consider in monitoring readiness and quality in addition to standard factors such as possession of a high school diploma and high AFQT scores. Those indicators and their status as of October 1983 are:

- quality recruiting: increasing
- retention: increasing
- attrition: decreasing
- desertion: decreasing
- unauthorized absence: decreasing
- extensions for sea duty: increasing
- requests for sea duty: increasing
- requests for retirement or transfer to the fleet reserve: decreasing
- fleet manning: improving

In reviewing the various responses, it becomes clear that although each Service may be defining "quality" somewhat differently, the underlying quantitative definition is quite similar. Namely, educational level and AFQT performance are used by each of the Services as entry-point indicators and (with modification) continue to be used for assessing force quality. In the next section, then, these indicators are examined.

B. INDICATORS OF QUALITY.

1. General. The 1981-82 Military Manpower Task Force (MMTF) in its Report to the President on the Status and Prospects of the All-Volunteer Force, November 1982, examined the "Characteristics of the Armed Forces Personnel." This was a review and analysis of many indicators of

Service personnel quality. The 5th QRMC assessment is not intended as another analysis of the same indicators nor is it necessarily an attempt to refute anything contained in the MMTF report. Quite the contrary, this study will cite or utilize data from the MMTF final report as a basis for additional analysis. The comprehensive review of AFQT and education contained in the OSD Profile of American Youth, March 1982, and unclassified portions of the OSD FY 1984 Force Readiness Report, Volume III: Personnel and Training Readiness, April 1983 (Classified) also will be used.

The Military Manpower Task Force (MMTF) extensively examined characteristics of military personnel, particularly new accessions. In opening that chapter, the MMTF discussed quality as follows:

The relative ability of military personnel to learn military skills and perform creditably in military units is usually referred to as the "quality" of the personnel. The normal measures of quality for enlisted accessions are the percentage that have graduated from high school, a sound indicator of the likelihood of successfully completing an enlistment, and scores on the Armed Forces Qualification Test (AFQT), a good predictor of success in military training.

These two measures of quality are very useful to manpower managers because of their proven reliability and because they can be readily quantified. However, they do not necessarily capture all aspects of quality. They are imperfect indicators of such attributes as dedication and motivation, and they cannot predict the growth in personal ability and dependability as a "team player" that can be developed through good training and leadership.⁵

This issue paper first will discuss highlights from the MMTF report on educational attainment, without further assessment. Second, additional analysis, based on data from the Defense Manpower Data Center, of the impact of AFQT distributions on the total force is included to supplement a discussion of AFQT. Several other indicators of quality are then addressed.

This review discusses both new accessions and the career force. It is generally accepted that quality of the force is driven by accession policy. Cooper, in Military Manpower and the All - Volunteer Force (September 1977) noted, "The key AVF issue is not manpower supply; it is enlisted accession requirements."⁶ We do not minimize that importance. However, the impact of any problems in accession policy cannot be mitigated solely by changing the policy or improving the quality of future accessions. Perturbations or "valleys" in the system created by a mistake in accession policy might be dealt with by Special and Incentive

Pays which can provide needed temporary adjustments. Thus, errors in accession policy are appropriate to Special and Incentive Pay solutions. First, however, the indicators of quality must be understood.

2. Educational Attainment. The MMTF compared the 2.1 million military people on active duty with the population in the civilian labor force in terms of educational attainments. An extract of this MMTF comparison is shown in Table 1.

Table 1
Educational Attainments:
Active Duty Military Compared to Civilian Labor Force ⁷
(Percent)

Maximum Educational Level	Civilian*** Labor Force	Military Personnel*		
		Total	Officer	Enlisted
College Graduate	19%	14%	92%	2%
Some College	18	11	5	11
High School	41	67	3	78
Graduate**				
Non-HS Graduate	22	8	0	9
TOTAL	100%	100%	100%	100%

* Data as of 30 June, 1982.

** Includes non-diploma graduates with high school equivalency certificates.

*** Source of civilian data: Bureau of Labor Statistics, Special Labor Force Reports, as of March 1982.

These data shows that 91 percent of the total enlisted force are high school graduates or better. The MMTF stated that the above data indicated the following:

The educational level of the active duty force compares favorably with that of the civilian labor force. There are proportionately fewer who lack a high school education in the military population (8 percent) than in the civilian labor force (22 percent). The civilian labor force has a higher proportion of people with "some college", but military personnel receive technical training while in service that is not reflected in the data in the table. Much of this technical training is comparable to courses offered by civilian junior colleges and technical schools, and is generally accepted for college credit by these schools.⁸

The March 1982 Profile of American Youth noted that, "A person who did not graduate from high school is twice as likely to leave the military before completing the first three years of service as is a high school diploma graduate."⁹ High school graduate data for new accessions as presented by the MMTF is shown in Table 2 with FY83 added. It should be noted that in 1980, 74 percent of the 18-23 year old

Table 2
High School Graduates* as
a Percent of Enlisted Accessions¹⁰

Service	Draft Years			AVF Years					
	FY64	FY68	FY72	FY74	FY76	FY80	FY81	FY82	FY83
Army	70	71	61	50	59	54	80	86	88
Navy	57	82	71	64	77	75	76	79	91
USMC	61	58	52	50	62	78	80	85	92
USAF	84	93	83	92	89	83	88	94	98
DoD	69	74	67	61	69	68	81	86	91

*High School Graduates" includes those with post-secondary education. Excludes non-diploma graduates with high school equivalency certificates.

population in the United States were high school graduates. In the last two years, each of the Services has exceeded that average with 86 percent of overall DoD accessions possessing at least a high school diploma. Note that in FY83 the Services averaged 91 percent high school graduates in their accessions. Congress has set a requirement for the Army that 65 percent of Army male enlistees from 1983 through 1987 must be high school graduates. The Army is reaching this goal during the current period of high unemployment.¹¹

3. The Armed Forces Qualification Test (AFQT). As previously mentioned, the AFQT is considered a good predictor of success in military training. The definition of the AFQT categories is displayed in Table 3. AFQT Categories of I, II or IIIA are considered above average in trainability; Category IIIB and IV are below average. Category V personnel are not accepted for military service. Currently, those in Category IV who are non-high school graduates are also not accepted. In addition, each Service sets a "floor" score within Category IV below which applicants are not accepted. At present that is set by Army at 16, Navy at 17, and Marine Corps and Air Force at 21. As with the Congressionally mandated high school graduate minimum percentage mentioned above, Congress also recently required that no more than 20 percent of non-prior service accessions in any of the Services score in AFQT Category IV.¹²

Table 3
AFQT Categories

<u>Percentile Rank</u>	<u>AFQT Category</u>
Above Average	
93-99	I
65-92	II
50-64	IIIA
Below Average	
31-49	IIIB
10-30	IV
1-9	V

Disagreement does exist over the use of AFQT scores as a measurement of "quality" and also over the Service requirements for certain percentages of personnel in varying AFQT categories. Floors on scores and Congressional restrictions force the Services to compete for "quality" personnel.¹³ For example, Enlistment Bonuses (EBs) are generally paid only to personnel scoring in AFQT categories I, II or IIIA. (Navy is an exception.) This excludes 47 percent of the American youth population from consideration (Table 4, presented later). The Navy pays the Enlistment Bonus to personnel in AFQT Category IIIB and IV. They argue for this approach stating that they do not pay the bonus until the successful completion of training and that no evidence exists to show that "lower AFQT category personnel who complete training and receive an EB experience higher post-training attrition." Further, "it is likely that Category IIIB and IV personnel have higher retention at the completion of first term."¹⁴ Navy states that current recipients have shown the ability to learn and apply these skills for which they are paid an Enlistment Bonus.

The AFQT as a measure of general trainability is considered a reliable index of basic verbal and numeric skills. The AFQT score is a composite derived from the Armed Services Vocational Aptitude Battery (ASVAB). In the March 1982 Profile of American Youth the validity of the AFQT and ASVAB composites were described as follows:

The experience of the last 35 years suggests that individuals who score low on the AFQT are less likely to be successful in military training than are their higher scoring peers. Additionally, they are more likely to have disciplinary problems. Though there are many high-scoring personnel who prove ineffective and many low-scoring persons who perform well, on the average, the higher an individual's AFQT score, the greater the likelihood of successful military performance.

Scores on the ASVAB aptitude composites (e.g., electronics, combat, administrative) have also shown their usefulness. Many training courses are highly technical and require a degree of mechanical experience, and others an ability to deal with clerical and administrative tasks. Again, yet not perfectly predictive, the higher the scores attained on ASVAB aptitude composites, the greater the probability that an individual will perform well in training and develop the specific skills needed to be effective on the job.¹⁵

Some have expanded the AFQT beyond just an enlistment predictor measuring trainability to become an indicator of force quality. As noted earlier, this issue paper treats AFQT scores in the latter manner but only as one of several factors examined when determining quality. Many disagree with this approach, maintaining that on-the-job performance evaluations should be the measure once an individual has entered the military and completed initial training. Lack of historical data and a common evaluation method across the Services has hindered that approach.

Some studies have indicated that AFQT scores can be used as a limited measure of productivity beyond initial enlistment standards; however, there are no in-depth studies substantiating this use. In a December 1981 review of manpower research and policy issues, Warner of the Center for Naval Analyses stated,

Perhaps the most controversial productivity issue is the relationship between productivity and personnel quality, as measured by attributes such as high school degree status and mental group [AFQT category]. Most pronouncements of the failure of the AVF are made on the grounds that the Navy and the other services need high quality recruits, but only low quality recruits have been attracted. Despite these contentions, the empirical evidence of the effect of personnel quality on productivity is scant. Some evidence ... may be gleaned from the attrition research...[and from] the Horowitz-Sherman study, unpublished work by Gay cited by Cooper, and the Gates Commission studies by Sullivan, and Reaume and Oi. The studies by Horowitz and Sherman and by Gay are generally consistent with findings of attrition studies.

First, high school degree status is the factor most correlated with productivity, especially in medium and low skill jobs. Second, while there are differences in productivity according to mental group, these differences are most pronounced in high skill jobs. Gay estimates that in high skill jobs the difference in productivity between mental

roup I and mental group III high school graduates is 18 percent. For medium and low skill jobs, the difference is estimated to be only 6 percent. Importantly, differences in productivity by high school status and mental group are decidedly smaller than productivity differences by experience level.¹⁶

Lacking any one sure measure of quality for Uniformed Services personnel, trends in AFQT scores can be one of the several factors considered as an indication of quality, perhaps as surrogates for capabilities and skills.

Table 4 summarizes much of the MMTF AFQT review regarding enlisted accessions. This reflects the quality of recent accessions and shows that the cross-section of military entrants score above the "youth population" as a whole.

Given the economic and unemployment situation in 1981 and 1982, these results are not unexpected but are encouraging. Less encouraging, however, is a view of the AFQT profile in historical perspective. Figure 1, extracted from the Profile of American Youth report, provides a view of the percent of male non-prior service accessions who had AFQT scores in Category I, II and IIIA (at or above average of 50) during the period 1961-1981. There was a very noticeable dip, albeit explainable, in scores during the years 1976 to 1980. The Services may be facing potential problems caused by these changes in quality of personnel accessed, measured either by AFQT or educational attainment.

Table 4
Comparison of AFQT Scores: 1980 Youth Population (Age 18-23)
and Non-Prior Service Accessions, FY81 and FY82
(Percent)

AFQT Categories	Youth ¹⁷ Population 1980	DoD Total FY81	DoD Enlisted Accessions - FY82 ¹⁸				
			DoD	Army	Navy	USMC	USAF
I	4	3	3	3	4	2	3
II	33	30	34	29	36	32	41
IIIA	16	22	23	21	26	25	25
(Subtotal- Above Avg.)	(53)	(55)	(60)	(53)	(66)	(59)	(69)
IIIB	16	27	27	28	24	32	25
IV	24	18	13	19	10	9	6
V	7	0	0	0	0	0	0
Total	100	100	100	100	100	100	100

There are various factors which can be used to explain the changes in the distribution, by AFQT, in Figure 1. As explained in the Profile of American Youth:

The proportion of accessions in Category I remained fairly constant from FY 1961 through FY 1969, both for total DoD and for the Army. However, since 1970, there has been a downward trend in the proportion of Category I accessions -- a trend that is similar to the decline in scores on the Scholastic Aptitude Test (SAT) and other standardized aptitude and achievement tests during the same period.

For FY 1961 through FY 1976, the percentages of Category II DoD recruits were greater than the 28 percent level in the World War II reference population. However, in the Army the Category II accessions during this period remained consistently close to the World War II level. From FY 1976 through FY 1980, the proportion of Category II accessions decreased, both for total DoD and for the Army, followed by a significant increase in FY 1981. Two major factors that may have contributed to this decline were an improved national economy following the recession of 1974-75, with attendant improvements in civilian job prospects, and a relative reduction in military pay (i.e., in relation to changes in the cost-of-living).

The distributions of Category III and IV accessions, both total DoD and Army, tended to be inversely related... [When] the proportion of Category III accessions decreased, the proportion of Category IV accessions increased, and vice versa. The three major shifts in the proportion of Category IV accessions -- the sharp rise during the late 1960s, the rapid decrease in the mid 1970s, and the rise in the late 1970s -- seem to be related to specific events or changes in recruiting policy. During 1966-71, "Project 100,000" resulted in the entrance of 322,000 lower-ability individuals, thus increasing the proportion of Category IV accessions. The sharp decrease in the proportion of Category IV accessions during the early 1970s was a function of several factors -- the end of the Vietnam conflict and consequent drop in accession requirements, and heightened recruiting efforts and increases in military compensation in connection with the introduction of the All-Volunteer Force, which tended to attract more highly qualified recruits. The higher per-

centages of Category IV accessions during FY 1976-
FY 1980 resulted primarily from the ASVAB miscalibration, which originally placed many recruits in Category III when they should have been in Category IV.¹⁹

Special note needs to be made of the ASVAB miscalibration cited in the above quote. Specifically, an error in calibration of the ASVAB in use from January 1976 through September 1980 resulted in inaccurate category designations for some recruits taking the test. (Calibration is a method through which test raw scores are converted to percentile scores, since raw scores on a test are of limited usefulness by themselves. When they are calibrated against the scores of a defined and relevant population, here all military personnel under arms as of December 1944, percentile scores from different versions of a test have the same interpretive meaning.) As noted in the Profile of American Youth the ASVAB tests which,

...went into use in January 1976 had been miscalibrated to earlier forms of the test, and this error inflated the AFQT scores of lowscoring enlistees. The problem was corrected with introduction of the new, accurately calibrated test in October 1980. In addition, the inflated scores for the FY 1976-1980 period were recomputed, and the corrected norms were made available. This recomputation resulted in a significant decrease in the percentages of Category III recruits [from that originally reported] and an increase in Category IV enlistees recorded as having entered the Services during the late 1970s.²⁰

All of the data in this review has been renormed to account for the miscalibration discussed above.

The drop in AFQT scores reflected in Figure 1 has impacted the total DoD-wide enlisted force. This is shown in Table 5 which provides an AFQT category breakdown for all DoD enlisted personnel over the years 1977 through 1982. AFQT Category I is merged with Category II primarily because both reflect above average ability. Appendix F provides a display of the impact of the miscalibration on DoD accessions during period the 1976-1980 extracted from the Profile of American Youth. It should be noted that Table 5 and all other references to the AFQT category distribution of the force in this study are underestimates of the abilities of its members, since AFQT category is determined at the time of entry into service. Although the Army encourages retesting, even for that Service, AFQT scores do not reflect military training, in-service educational opportunities, or experience gained subsequent to entry. In Table 5, the most significant changes are the decline in percent of enlisted personnel scoring in AFQT Categories I and II from about 43 percent in 1977 to about 35 percent in 1982 and the concurrent increase in Category IV personnel over the same period from about 11 percent of the total enlisted force to nearly 21 percent of the force.

Figure 1
Percent of Nonprior Service Accessions²¹
(Total DoD) Scoring At or Above AFQT 50,
Fiscal Years 1961-81

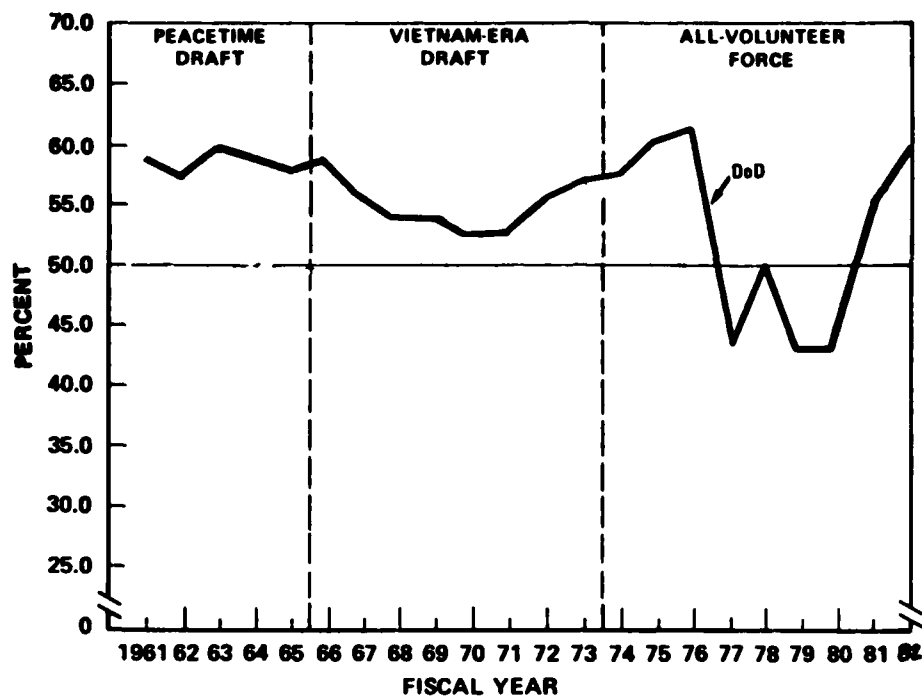


Table 5
DoD-Wide AFQT Category Percentages*
All Enlisted Personnel (0 to 30+ YOS)

AFQT Category	Fiscal Years					
	77	78	79	80	81	82
I & II	42.9	41.1	39.1	37.0	35.1	35.2
IIIA	22.4	21.5	21.3	20.5	20.0	20.2
IIIB	24.1	23.5	23.5	23.4	23.4	23.9
IV	10.7	13.9	16.2	19.1	21.5	20.7

*The data available does not identify AFQT Categories for all members. Unknowns (no more than 15% of the population) were not included in the strengths for the purposes of percentage calculations.

As noted earlier, 1976-1980 accessions did not score as well as those in previous and succeeding years, to a large extent unbeknown to DoD at the time as a result of the misnormed test. A close look at the total enlisted force reveals that, currently, about 56 percent are in 0 to 4 years of service (YOS). This percentage creates the lowered scores of the entire force, as displayed in Table 6.

Table 6
DoD-Wide AFQT Category Percentages*
Junior Personnel (0-4 YOS)

AFQT Category	Fiscal Years					
	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>	<u>81</u>	<u>82</u>
I & II	42.3	39.3	36.7	32.9	30.1	31.0
IIIA	23.2	22.0	21.3	20.0	19.3	19.7
IIIB	25.8	24.7	24.3	24.1	23.9	24.7
IV	8.7	14.0	17.6	23.1	26.7	24.5

*The data available does not identify AFQT Categories for all members. Unknowns (no more than 15% of the population) were not included in the strengths for the purposes of percentage calculations.

To date, the junior personnel with lower AFQT scores have impacted the career force personnel little, as can be seen in Table 7 which displays data on the group with 5 to 20 years of service. However, there has been some minor change in the last year, when 1978 enlistees started entering the career force. It will take a few years to observe the full impact of the reduced accession quality as indicated by AFQT scores, unless the Services continue to take steps to impose strict standards for reenlistment eligibility and thus deny these personnel the opportunity to continue service.

Table 7
DoD-Wide AFQT Category Percentages*
Career Personnel (5-20 YOS)

AFQT Category	Fiscal Years					
	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>	<u>81</u>	<u>82</u>
I & II	44.1	44.1	44.1	43.5	43.9	41.6
IIIA	20.8	20.9	20.9	21.2	21.4	20.7
IIIB	20.8	21.2	21.2	21.9	22.1	22.6
IV	14.3	13.8	13.8	13.5	12.7	15.1

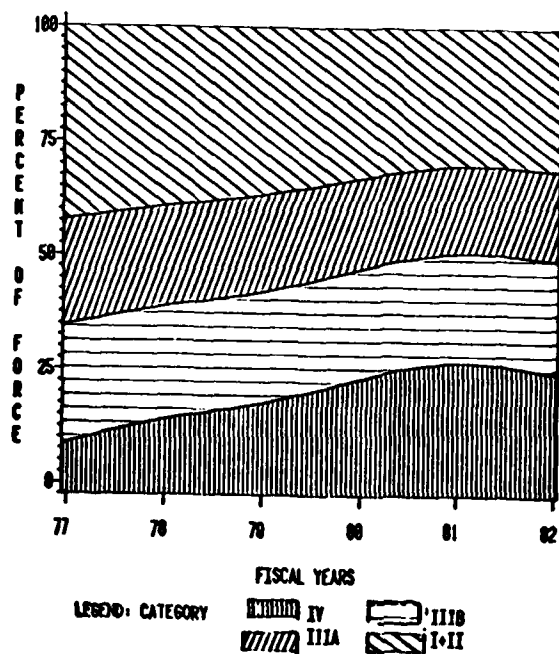
*The data available does not identify AFQT Categories for all members. Unknowns (no more than 15% of the population) were not included in the strengths for the purposes of percentage calculations.

The passage of the enlisted personnel who accessed during the misnorming period, is presented graphically in Figure 2, showing the junior enlisted personnel, length of service 0-4 years.

Figure 2

COMPARISON OF AFQT SCORES

DoD PERSONNEL 0 TO 4 YEARS OF SERVICE



*The data available does not identify AFQT Categories for all members. Unknowns (no more than 15% of the population) were not included in the strengths for the purposes of percentage calculations.

The impact of a decline on DoD occupation groups, as defined in the OSD Occupational Conversion Manual,²² can be seen in Figure 3 and Tables 8 and 9 which indicate a general decline in the above average military population based on examining AFQT scores. Figure 3 shows that the percentage of military personnel in AFQT Categories I, II, and IIIA, i.e., average or above AFQT scores, has experienced a continuous downward trend in most occupational fields in each of the past six fiscal years. The only exception is in the DoD occupational field "0" which includes the Army combat arms skills.

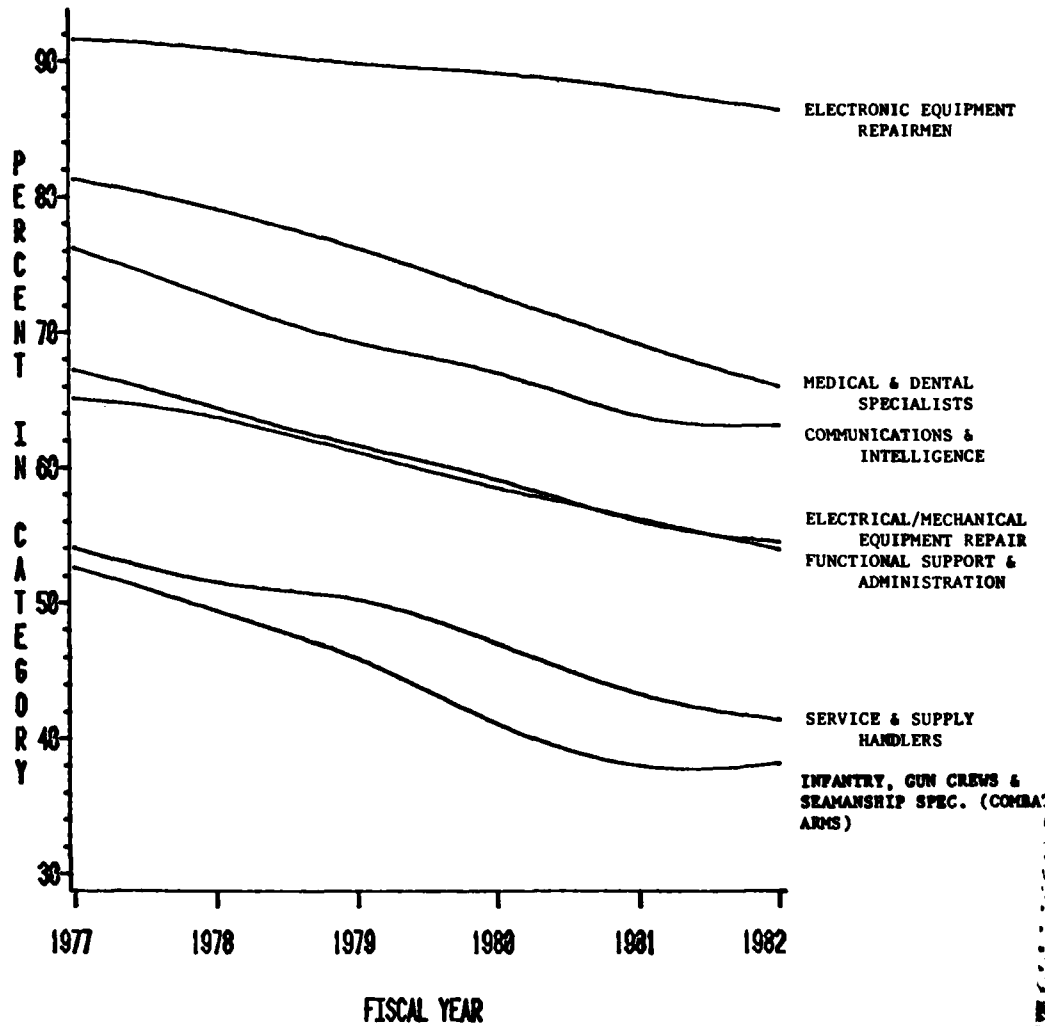
In FY82 there was a slight improvement in the average or above scores from 38.0 to 38.2 percent of the personnel in the combat arms. However, this followed a five-year decline from 52.6% in Categories I, II and IIIA for FY77. Some of this recent reversal may be due to increased Enlistment and Selective Reenlistment Bonuses for the combat arms MOSs, the 1981 implementation of the Ultra Veterans Educational Assistant Program (UVEAP), an enhanced contributory program applicable only to Army enlistees, and the Army test program to provide bonuses based on an AFQT score of 50 or higher.

Figure 3 also graphically portrays the fairly consistent selective categorization of personnel into occupational fields. That is, personnel with certain AFQT scores generally have been assigned to specific fields, on a graduated basis, presumably technical or other skill needs. Fields have maintained their relative position. However, the scores of personnel in the electronics area have not declined as much as other fields (from 91.6 percent to 86.4 percent) while the medical and dental specialists field showed a more drastic drop (from 81.3 percent to 66.0 percent in the average or above categories). Categories IIIA and IIIB changed little over the years.

Figure 3

DOD ENLISTED OCCUPATION COMPARISON

AFQT CATEGORY IIIA OR ABOVE



*The data available does not identify AFQT Categories for all members. Unknowns (no more than 15% of the population) were not included in the strengths for the purposes of percentage calculations.

Tables 8 and 9 depict where changes occur by Service in each occupational field for personnel scoring in AFQT Category I & II and in Category IV, respectively. (Similar data for Categories IIIA and IIIB personnel are not available.) This is the aggregate for all personnel at all lengths of service in that occupational field for FY77 and FY82.

It can be seen in Table 8 that Category I & II Electronic Equipment Repairmen dropped little while Medical and Dental Specialists Category I & II declined by nearly 30 percent (i.e., in FY77, 60 percent of the DoD enlisted personnel in that occupation scored in AFQT Category I or II while in FY82 only 43 percent did), a decline of 28.3 percent. Similarly, personnel in Service and Supply scoring in AFQT Category I & II show a decline of 27 percent. These changes are alarming only if previous standards are required today.

Of the problem of quality requirements, Warner of CNA noted:

It is not clear from these analyses what the optimal force mix is or how it has changed over time. Gates Commission work by Sullivan and Reaume and Oi suggests that the services tend to overstate their quality requirements. This conclusion was based on an occupation-by-occupation comparison of the mental group and educational mix of military and civilian labor forces. Whether such a conclusion would be warranted today is debatable.²³

Certainly, efforts need to be continued to refine such requirements. As another example, Marine Corps personnel in the Service and Supply Field have increased from 5 percent in Category IV in FY77 to 27 percent by FY82. However, the other Services had higher percentages of Category IV in that field in FY77, and the DoD average now is 30 percent in Category IV for the Service and Supply field.

The overall value of compensation obviously affects the shifts in the quality distribution in the population. In a November 1982 study for the Army Center for Economic and Manpower Research, Baldwin, Daula and Fagan found the following with respect to quality:

High quality, mental category one to three A, high school graduates have a much higher responsiveness to pay and bonuses than lower quality potential reenlistees. This elasticity varies by MOS...However, in every MOS, the high quality elasticity is roughly twice as much as the lower quality elasticity. The implication is that when pay is "capped" or when bonuses are reduced, the Services will lose proportionately more high quality young soldiers.²⁴

The question, of course, still remains on the impact of compensation vis-a-vis force management policies, i.e., entry into the Service, promotions, and reenlistment discharges. The Baldwin, Daula and Fagan study also found, as expected, that "all other variables being constant, if you are promoted rapidly you are more likely to reenlist."²⁵ Kim, in the National Longitudinal Survey of Youth Labor Market Experiences: Military Studies (May 1982), also observed, to no one's surprise, that the status of an individual's job satisfaction was a most important factor in the reenlistment decision for those youths who enlisted between 1975 and 1977.²⁶

Obviously, no studies can be taken as applicable to every Service and to all of their occupational fields. However, the existence of automated data and the availability of data from longitudinal and crosssectional studies should lead to a better understanding of the reactions to changes in both management policies and compensation which may be causing these shifts in AFQT categories within the Military Services. These insights may, in turn, assist the Services in better defining their quality requirements.

Table 8
Percent of Personnel in Each DoD Occupation Code
Who Scored in AFQT Category I & II
FY77 and FY82

DoD Occup Code	Name of Group	Service										Category Population	
		Army		Navy		Air Force		Marine Corps		All DoD		All DoD (000)	
		77	82	77	82	77	82	77	82	77	82	77	82
0	Infantry, Gun crews, & Sea- manship Spec.	28	18	32	36	58	38	26	19	28	21	65	53
1	Electronic Equip. Repairman	53	42	83	76	83	80	81	78	77	70	127	110
2	Comm. & Intel. Spec.	47	32	60	51	59	54	47	36	53	42	77	65
3	Medical & Dental Spec.	59	37	60	46	63	51	-	-	60	43	46	35
4	Other Technical & Allied Spec.	59	40	67	66	53	52	46	41	57	48	22	19
5	Functional Support & Admin	40	25	47	39	47	40	48	40	44	33	102	96
6	Electrical/Mech. Equip Repair	27	18	53	44	38	36	48	34	41	33	137	120
7	Craftsmen	30	16	41	34	34	31	37	24	36	28	26	20
8	Service & Supply Handler	33	20	17	18	33	30	29	20	30	22	52	37
9	Non-Occupational (Students & Recruits)	31	30	31	31	56	49	39	35	35	35	98	73

*The data available does not identify AFQT Categories for all members. Unknowns (no more than 15% of the population) were not included in the strengths for the purposes of percentage calculations.

Table 9
Percent of Personnel in Each DoD Occupation Code
Who Scored in AFQT Category IV*
FY77 and FY82

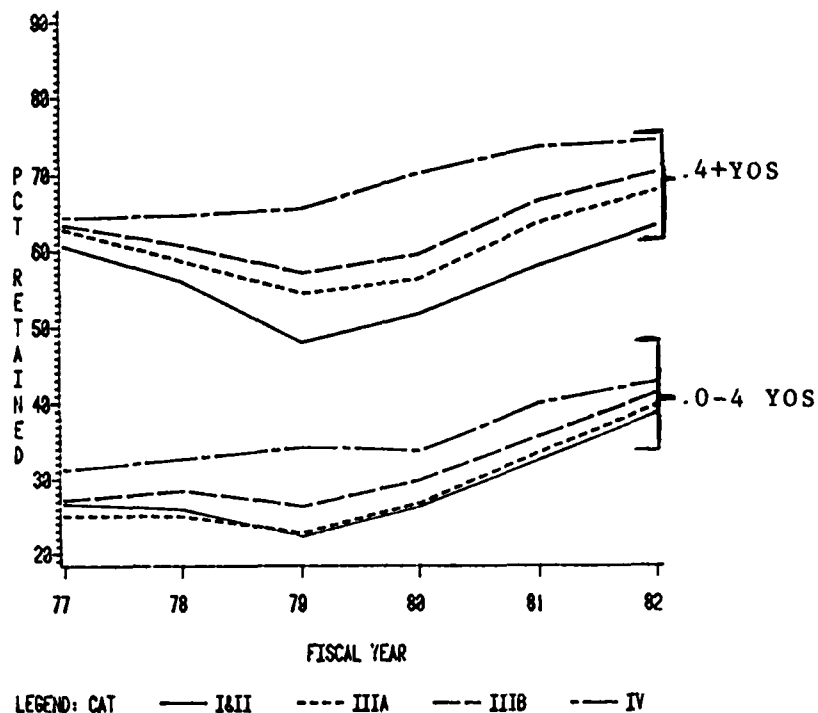
DoD Occup Code	Name of Group	Army		Navy		Air Force		Marine Corps		All DoD		Category Population All DoD (000)	
		77	82	77	82	77	82	77	82	77	82	77	82
0	Infantry, Gun crews, & Sea- manship Spec.	14	41	19	25	5	8	6	29	13	35	29	86
1	Electronic Equip. Repairman	7	18	1	2	1	1	0	1	2	5	3	7
2	Comm. & Intel. Spec.	8	24	2	7	4	4	4	11	5	15	7	24
3	Medical & Dental Spec.	6	20	3	7	4	4	-	-	4	12	3	8
4	Other Technical & Allied Spec.	5	20	4	3	7	7	4	11	6	13	2	5
5	Functional Support & Admin	14	30	11	17	10	11	3	10	11	20	31	58
6	Electrical/Mech. Equip Repair	16	41	7	15	6	9	2	16	9	21	29	76
7	Craftsmen	14	39	9	14	11	14	3	24	11	21	8	15
8	Service & Supply Handler	18	39	36	32	10	14	5	27	16	30	29	51
9	Non-Occupational (Students & Recruits)	24	29	17	19	3	6	11	13	17	18	47	37

*The data available does not identify AFQT Categories for all members. Unknowns (no more than 15% of the population) were not included in the strengths for the purposes of percentage calculations.

To provide perspective on this shift of personnel within AFQT categories, DoD retention rates at the end of term-of-service (ETS) were calculated using DMDC data. The results are reflected in Figure 4 for personnel with 0 to 4 years of service and for those over four years of service. (Since this is the sum of those retained who were within one year of their ETS, these rates are not reenlistment rates.) There are distinct differences in the reenlistment behavior of personnel grouped by AFQT Category, particularly in the career force. Many would argue that by 4+ years in any Service, the AFQT category does not matter. However, there is also a difference in the behavior of personnel in the first term (0-4 years). More importantly, as can be seen in Figure 4 (note, 1979 data), when the economy is good and/or pay is relatively low, more higher ability personnel leave the Service than is the case for Category IV personnel. Thus, although accessions or accession policy may drive the "quality" issue at the entry point, the effects of differences in behavior at reenlistment points, of different AFQT category personnel, must be understood.

Figure 4

DOD RETENTION AT ETS

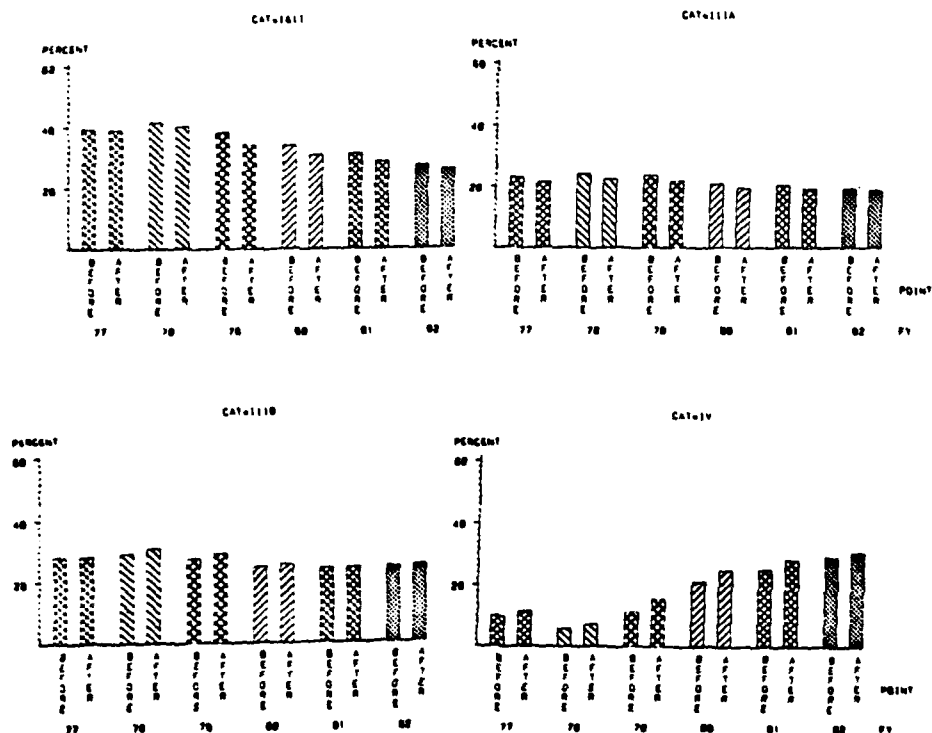


*See note, Table 5.

The issue of differential retention by AFQT categories is not simply a matter of accessions. It can also be seen by a category distribution of personnel year by year, before ETS and after ETS. Figures 5 and 6 are comprised of four vertical bar charts, present the results of this retention analysis for first-term and career personnel, respectively. Category IIIA personnel are retained according to their representation. Category I & II have more personnel leaving the service, while higher numbers of below average AFQT personnel are retained.

Figure 5

DOD AFQT CATEGORY DISTRIBUTION BEFORE AND AFTER ETS--1ST TERM

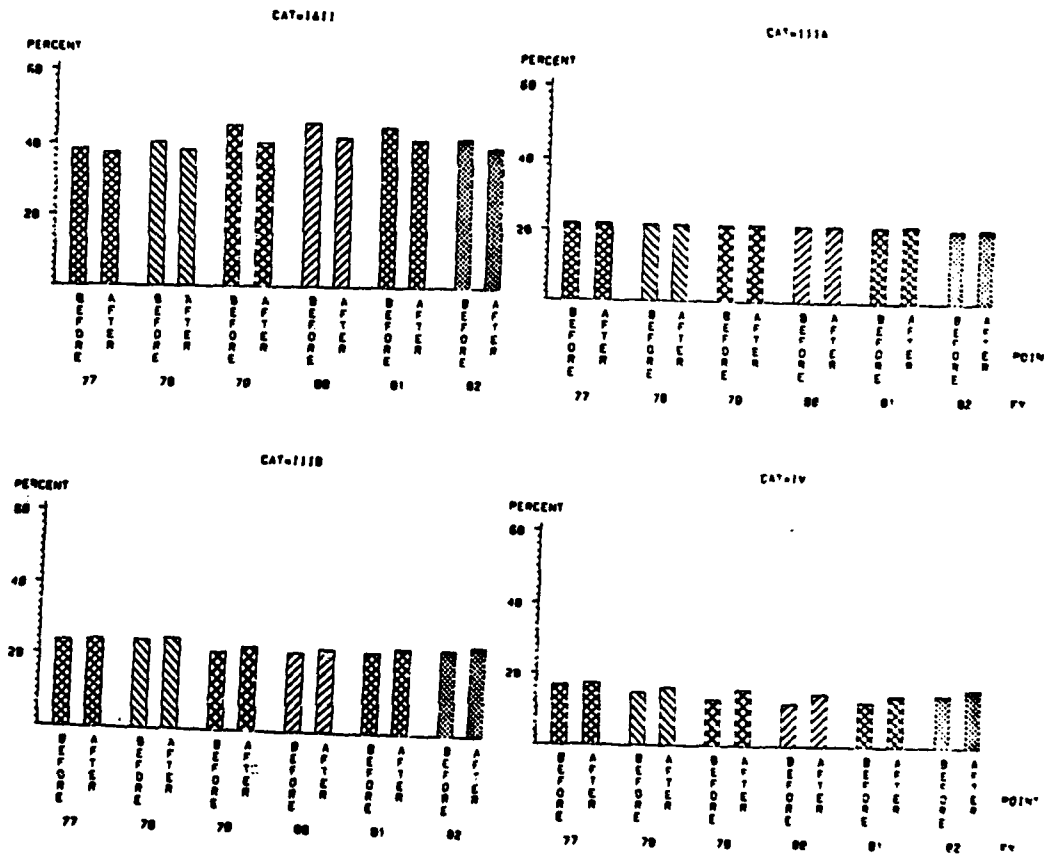


*See note, Table 5.

Similar displays of this data for each of the Services is provided in Appendices A through D (for Army, Navy, Marine Corps and Air Force, respectively). The Service trends are similar to the composite, but vary considerably. The Army, for example, has taken in a larger number of Category IV personnel. Since Service requirements for the distribution at reenlistment junctures are not officially stated, this analysis should not be construed as a Service comparison.

Figure 6

DOD AFQT CATEGORY DISTRIBUTION
BEFORE AND AFTER ETS--CAREER



*See note, Table 5.

Generally, the retention of personnel within occupational fields follows the trends shown in Figure 4. As would be expected, there are differences. In Figure 7 retention of personnel within one year of ETS is shown for four occupational fields. The fields included in Figure 7 are as follows:

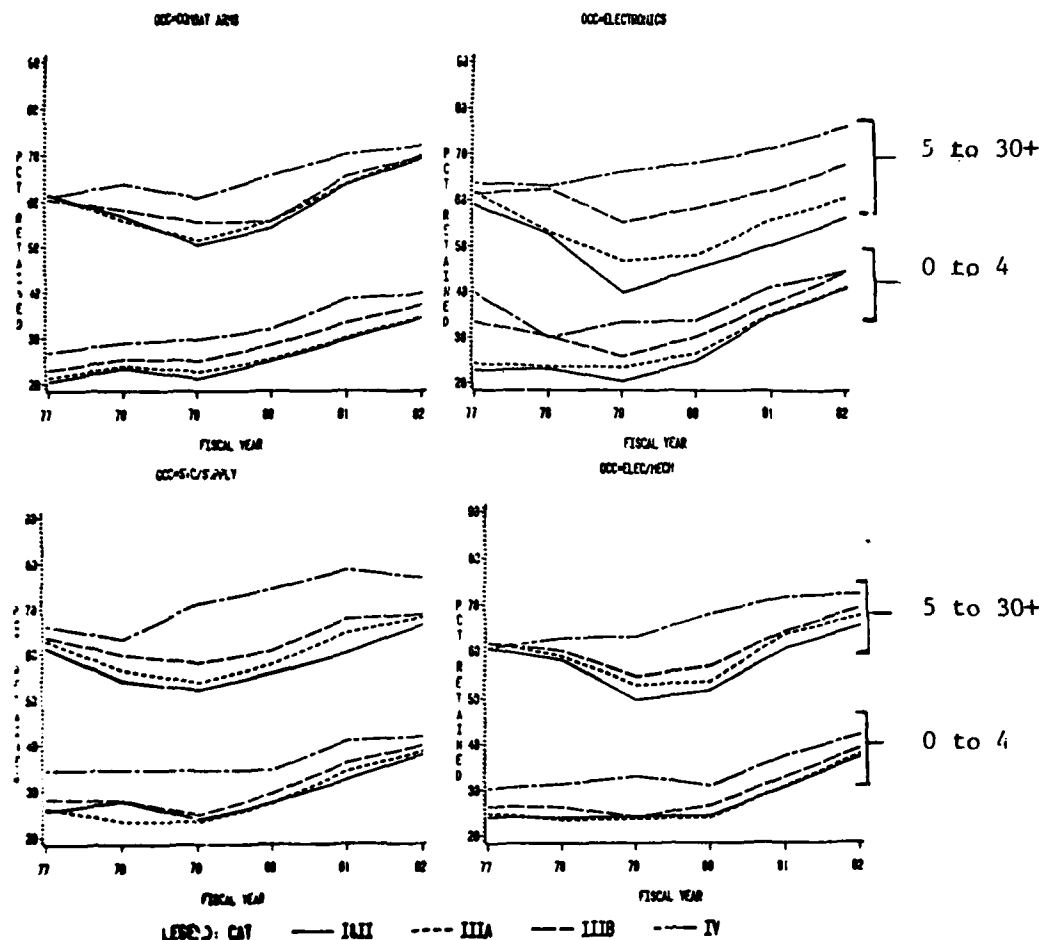
<u>DoD Occupational Field Number</u>	<u>Occupational Field Name</u>	<u>Total DoD* Population FY82</u>
0	Infantry, Gun Crews & Seamanship Specialists (Combat Arms)	248,000
1	Electronic Equipment Repairmen	156,000
6	Electrical/Mechanical Equipment Repairmen	361,000
8	Service and Supply Handlers	167,000

*Rounded to nearest thousand

The lower "percentage retained" (bottom set of lines in each plot of of this type) in each occupational field, represents personnel with 4 years of service or less. The higher percentages (upper part of each plot) reflect those with greater than four years of service. As with the over-all DoD retention trends in Figure 4, in most cases AFQT Category I & II personnel have lower retention than those scoring in other categories. For junior personnel, the low point for average and above personnel (Categories I, II and IIIA) is usually 1979, while retention frequently increased for Category IV personnel at this same time.

In general, Category I & II, IIIA and IIIB personnel, although distinct from each other in retention percentage, track fairly closely in trends with about the same differential. Personnel with Category IV scores do not follow or respond similarly, although the general trend has been improved retention. In examining the electronics personnel, the data from Tables 6 and 7 must be considered, that is, 70 percent of DoD personnel in this occupational field are in Category I & II. Only 5 percent are in Category IV.

Figure 7
DOD RETENTION AT ETS



*See Note, Table 5.

The difference in retention among AFQT categories, and how the Services vary, can be statistically shown by a simple least squares technique using FY77-FY82 data. (The least squares technique can be used to estimate the change in behavior for groups different from the excluded categories.) With retention rate as the dependent variable, and using Army and the largest AFQT Category, III (IIIA and IIIB combined), as the excluded categories, the results shown in the chart below were obtained for first-term DoD personnel. These estimates indicate that Army first-term Category III personnel over the past six years had an overall retention rate of 30.9 percent. As shown below, a Category IV reenlistment rate is estimated to be 34.6 by adding 3.7 to the excluded category (Army CAT III) rate of 30.9. The standard error shows that

the estimated difference of 3.7 produced by the least squares technique can be .999 higher or lower if it were to be reestimated using different sample data, but the high t statistic (3.7) and the low probability of a higher t statistic (.0002) show that the higher retention among Category IV personnel is statistically significant. The chart also shows that the Category I & II group has a lower retention rate but the relatively high probability of a larger absolute t statistic (0.1149) may indicate that this group is not significantly different from the excluded group. Navy and Marine retention behavior is clearly different from Army behavior, but Air Force behavior may be no different. Details of this analysis are provided in Appendix G.

<u>Variable</u>	<u>Parameter Estimate</u>	<u>Standard Error</u>	<u>t</u>	<u>Prob> t </u>
Intercept (Category III)	30.9	.897	34.5	0.0001
Category I & II	- 1.6	.999	- 1.6	0.1144
Category IV	+ 3.7	.999	3.7	0.0002
Navy	- 6.5	1.184	- 5.5	0.0001
Marine Corps	- 6.7	1.129	- 5.9	0.0001
Air Force	+ 0.4	1.129	0.4	0.7187

A similar analysis for career personnel provides the following:

<u>Variable</u>	<u>Parameter Estimate</u>	<u>Standard Error</u>	<u>t</u>	<u>Prob> t </u>
Intercept (Category III)	62.0	1.277	48.5	0.0001
Category I & II	- 3.7	1.423	- 2.6	0.0099
Category IV	+ 6.4	1.423	+ 4.5	0.0001
Navy	-14.4	1.687	- 8.5	0.0001
Marine Corps	-10.6	1.608	- 6.6	0.0001
Air Force	+ 0.5	1.608	0.3	0.7761

This shows that once an individual enters the career force there is a 10 percentage point spread between Category I & II personnel and those who scored in Category IV. Navy personnel reenlist at significantly lower rates than Army and Air Force personnel.

4. Experience Level in Services. Experience is a key factor emphasized by both military leaders and in civilian industry. The Services frequently cite the loss of experienced personnel in the late 1970's as a low point which must be avoided. During the course of the analysis of the Special and Incentive Pays, experience levels also often have been the subject of Service inputs, discussion and concern. The discussion of loss of personnel is usually focused on personnel in pay grades E-5 through E-9. However, since promotion flow points vary among Services,

experienced personnel will be considered here as those with greater than four years of service, rather than being defined by pay grade.

Although experience is important, just as with other quality indicators, the measurement and effects are complex. Warner, then of the Center for Naval Analyses (CNA), noted the following concerning the relationship of experience to productivity referencing another CNA study:

It is useful to know how productivity grows with experience and the rate at which first-term personnel can be substituted for careerists, keeping readiness constant. We also need to answer questions about careerists. What is the rate at which younger careerists (e.g., second-termers) can be substituted for older careerists (e.g., YOS 10-20 careerists)? Is substitution even possible among personnel with different experience levels?...

Horowitz and Sherman analyze the productivity of maintenance personnel in six ratings (BT, MM, FT, GM, ST, and TM*). Using a sample of 91 ships, they related the downtime of equipment maintained by personnel in those ratings to personnel characteristics and various other determinants of ship condition. They conclude that equipment on ships with higher manning levels is in general better maintained -- personnel marginal productivity is positive. But, the contribution of higher overall manning compared to improved crew characteristics (holding manning constant) varies considerably. Variations in crew size make the most difference on ships with simple equipment; improved crew characteristics as measured by experience, paygrade, and training make the most difference on ships with more complex equipment.²⁷
[Underlines added for emphasis]

*BT: Boiler Technican, MM: Machinist Mate,
FT: Fire Control Technican, GM: Gunner's Mate,
ST: Sonar Technican, TM: Torpedoman's Mate

These results are not surprising and they confirm one's intuitive reaction. It is a fact that ships, tanks, aircraft, guns and other equipment are becoming more complex as time progresses. Thus, retention of experienced, trained senior enlisted personnel is of ever increasing importance if we are to maintain quality Armed Forces.

Warner also took note of Albrecht's November 1979 study:

For 17 different Air Force Specialty Codes (AFSCs), Albrecht estimates the marginal rate of substitution (ratio of marginal productivities) of careerists and first-termers. The ratios range from 1.45 to 2.25. That is, at the current input mix observed in the 17 different AFSCs studied, additional careerists add between 1.45 and 2.25 times as much to output as additional first-termers. Generally speaking, careerists were found to have higher (relative) marginal productivities in higher skill AFSCs.²⁸

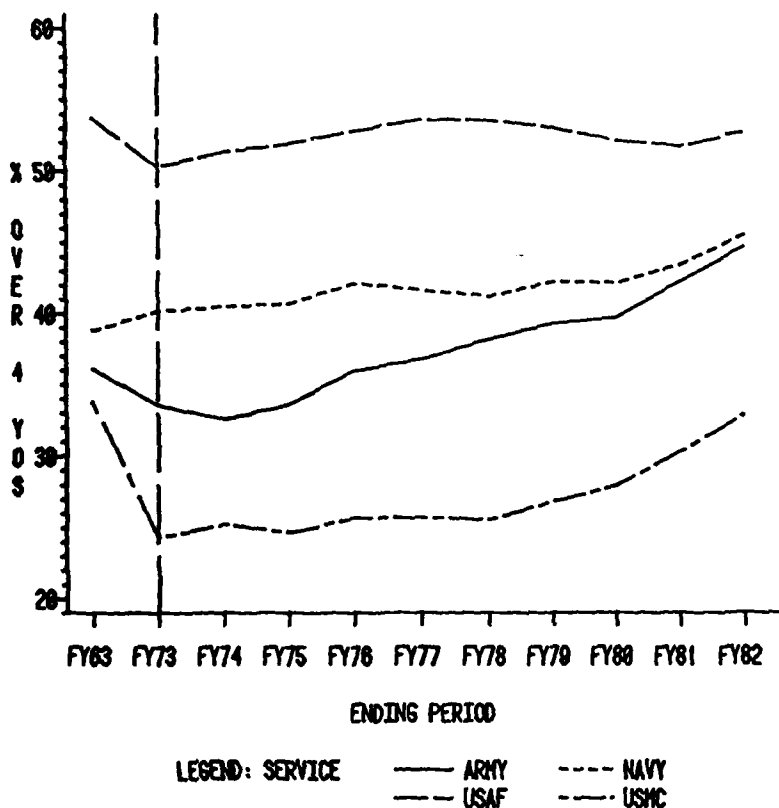
Warner further commented upon some interesting findings concerning experience on the job - not just total length of service - and of pay grade level as relating to productivity:

The hypothesis of the interaction between equipment complexity and marginal productivity of different labor inputs is borne out by a March 1979 CNA study by Horowitz and Sherman. A particularly interesting finding was that in the ST (sonar technician) rating, time at sea rather than total service experience was the experience factor most related to downtime. One other important result is that the manning level of high grade enlisted personnel (E8 and E9) was almost always associated with reduced down time, even on less complex equipment.²⁹

To review Service gains in experience, examine Figure 8, which is based on data from the Defense Manpower Data Center. This figure is a plot of the percent of each Service's personnel with greater than four years of service for FY63 and FY73 through FY82. As noted above, this measure may be meaningful only if personnel are given proper training and actual experience in their field. In addition, each Service has a different requirement for technical and supervisory level personnel. Therefore, cross-Service comparisons are not necessarily meaningful. The general improvement in experience level is, however, of note. Fiscal Year 1963 figures, reflecting the period prior to the Vietnam build-up, are shown for comparison. Some would argue that the Services, particularly the combat arms elements, are growing too fast. Again, requirements are key but not clear.

Figure 8

ENLISTED POPULATION CHANGE IN EXPERIENCE



Another measure which might be useful for examining changes in the experience of the force is the age distribution of the military population. Usually, "youth" is examined in reference to changes to the military retirement system and the impact on the aging of the force. Nevertheless, many observers view the age distribution as an indicator of Service quality. Here, we consider the age distribution to more directly address the issue of experience.

Examination of Table 10 shows that, in the past twenty years, several changes have occurred to the age distribution of DoD male military personnel. While the median age has risen approximately half-a-year, the proportion of the force over age 40 has declined. This suggests a slight age squeeze; that is, fewer number of very young and very old personnel. In short, the age distribution is more concentrated about the mean. If experience is defined in terms of completed years of service (YOS), so that you may assume that a person with two years of service has twice the experience or skills relevant to carrying out a mission than a person with one year, it would appear that over a twenty-year period, there has been an increase in experienced personnel, i.e., the force appears more skilled.

Table 10
Median Age of DoD Military Personnel³⁰

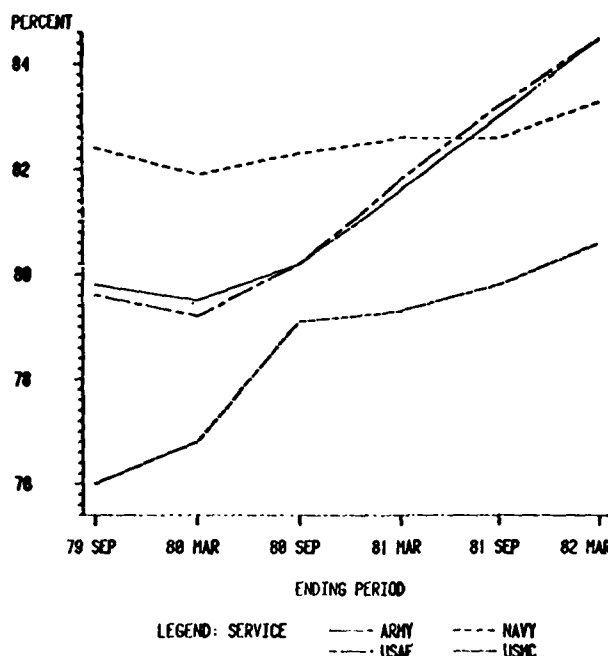
<u>Fiscal Year</u>	<u>Total Male Strength</u>	<u>Median Age</u>	<u>% of Force Over Age 40</u>	<u>% of DoD Enlisted with > 4 YOS</u>
1962	2,755,606	24.2	9.0%	41.1%
1967	3,341,707	22.6	6.0	31.2
1972	2,278,046	23.9	7.1	38.8
1977	1,955,577	24.4	6.7	41.4
1982	1,920,013	24.8	6.4	45.9

5. Aggregate Population Stability. This term, as used in the OSD FY 1984 Force Readiness Report, is a measure of the personnel stability of the overall Service. It does not refer to continuity at the unit level. It is calculated by comparing personnel inventory changes between two points, one year apart. Individuals who were in the Service at both points are considered stable. Thus, "100 percent stability" would mean that everyone in a given Service at the beginning of the year was still in the Service at year's end, i.e., no losses. Increased stability, therefore, reflects the sum effect of lower attrition and higher retention. No "judgments" are made of other factors such as skill match, pay grade, and training or experience levels in this measure. In addition, there is no defined standard or requirement for what an optional stability measure should be.

Figure 9 is a plot of aggregate population stability calculations for each Service based on the data in the OSD FY 1984 Force Readiness Report.³¹ The reader should note that the vertical axis of Figure 9 showing percent is truncated to visually display changes, i.e., the scale only goes from 76 to 84 percent. With this in mind, the changes for Army, Air Force and Marine Corps are impressive and the Navy had a small improvement upon an already high stability rate.

Figure 9

INCREASE IN AGGREGATE POPULATION STABILITY (OFFICER AND ENLISTED)



6. Unit Personnel Stability. Of interest to all commanders/ commanding officers are the changes in time not of the aggregate Service population but of personnel in their individual units. The trends in unit stability are displayed, separately for each Service, in Figure 10. Unit personnel stability is measured by comparing the number of personnel who remain in a unit population from one year to the next. By this measure, "60 percent stability" describes a population which retains 60 percent of its individuals from one year to the next; i.e, 40 percent are not there.

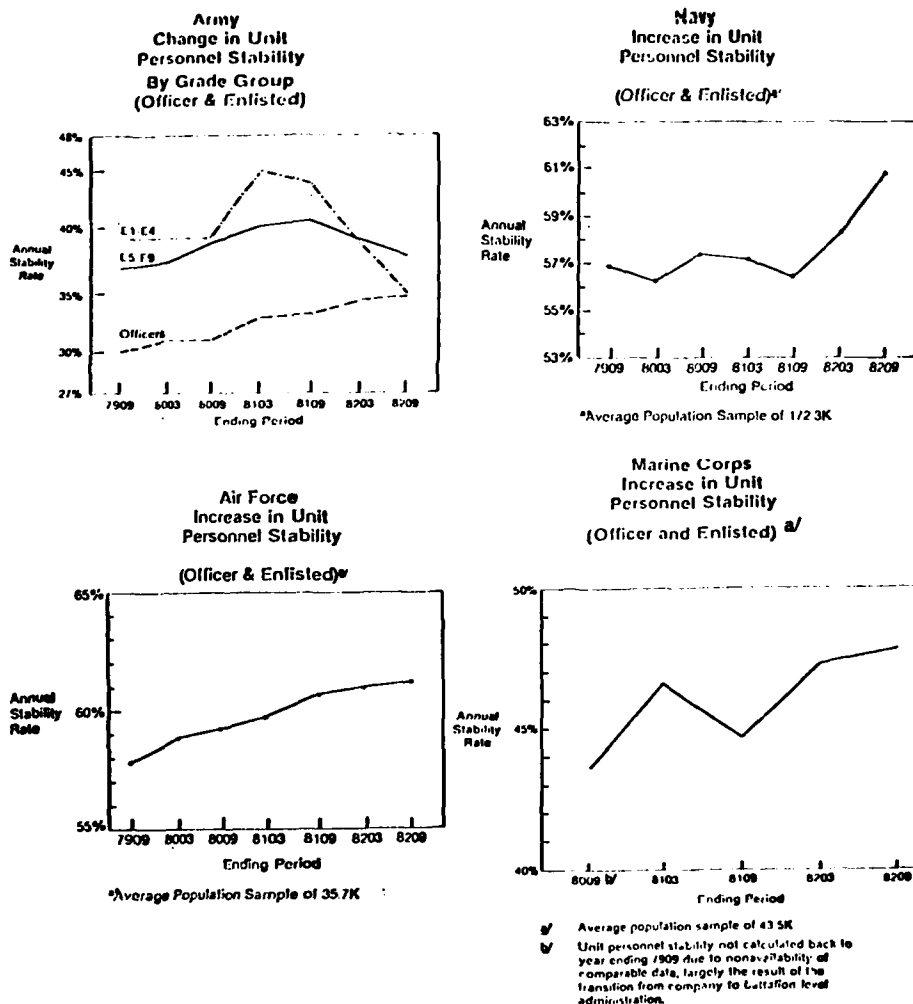
Unit population is determined by a sampling of the units. Note in Figure 10 that the large vertical axis is again restricted and, in this case, varies for each Service. The Army data is broken out by officer, enlisted pay grades E-1 to E-4 and pay grades E-5 to E-9. The OSD Force Readiness Report commented on the Army trends as follows:

The unit personnel stability trend in grades E1-E4 is not consistent with the aggregate population stability trend, which reflects an upward trend. Since the E1-E4 population is more stable in general, what the trend at the unit level shows is that more junior soldiers are staying with the Army to complete their enlistments, but they are moving around more among units.

This is attributed to an October 1981 change in the Army's tour length policy for European assignments. On that date the European tour length for three-year enlistees dropped from 24 to 18 months, and from 36 to 24 months for four-year enlistees. This change had the corollary effect of increasing turnover in CONUS-based units, which both receive returnees and provide replacements for European duty.³³

The Navy, Marine Corps and Air Force show a 6.8%, 9.4% and 7.4% improvement, respectively, over the period shown reflecting the Service-wide improvements in overall population stability.

Figure 10
DoD Personnel Stability by Service³²

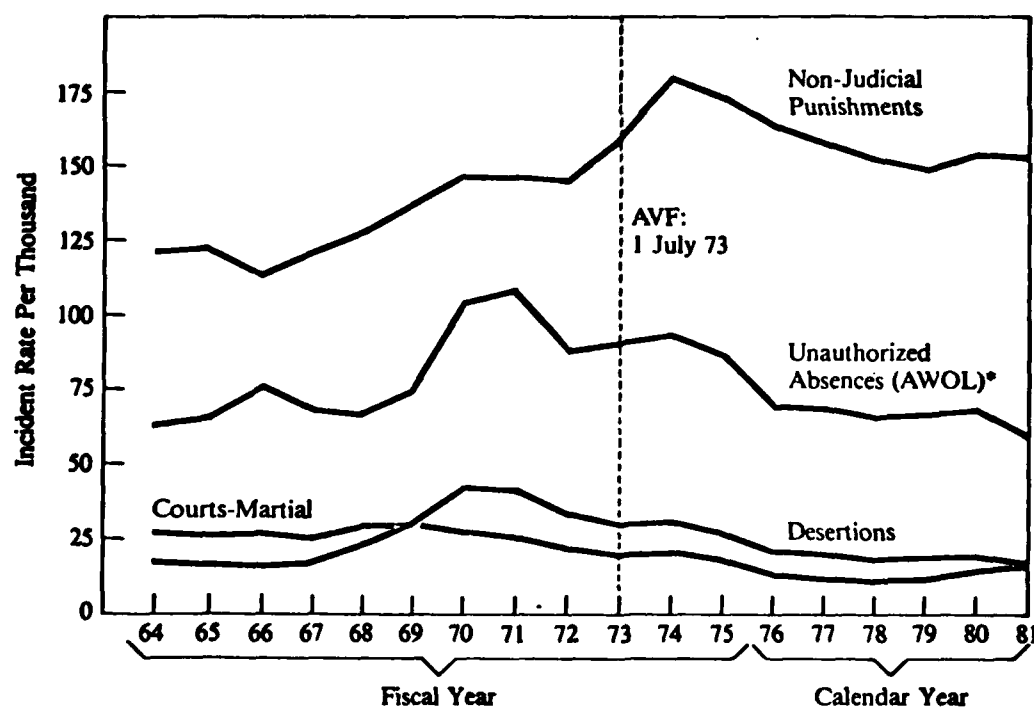


7. Discipline. Figure 11 reflects what the Military Manpower Task Force considered "indicators of indiscipline."³⁴ This review is including the MMTF figure as an indicator of "quality" or lack of it. At the aggregate level, except for desertions, one could argue that these data may not be valid for either purpose. For example, increased nonjudicial punishment may well reflect changes in policy to ensure higher quality standards are maintained. Of Figure 11, the MMTF report stated,

Rates of indiscipline rose sharply during the Vietnam War and have since declined. This pattern is normal - disciplinary problems typically increase in wartime and subside in peacetime. As a result, indiscipline rates for the volunteer force are roughly similar to the rates experienced in the early 1960s. The non-judicial punishment rate remains higher than it was in the early 1960s because of the increased use of this method of punishment for minor drug offenses. The rate of unauthorized absences declined in 1981, in large part because of improvement in the quality of enlistees.³⁵

Figure 11

Indicators of Indiscipline — DoD Totals



*AWOL rates include desertion rates.

Although each Service showed an improvement in FY82, there are large variations among the Services apparently unrelated to quality. It should be noted, however, that service duty and service policies do vary which can skew both data and trends derived from that data. Appendix H provides detailed service data on unauthorized absentees and deserters.

C. THE SPECIAL AND INCENTIVE PAY CONNECTION. To this point, little has been said about the relationship between Special and Incentive (S&I) Pays and quality. However, having now reviewed the quality data in the preceding sections, it is not surprising to find very little relationship.

With most of the Hazardous Duty Incentive Pays, for example, the dominant factor is the hazard. Accordingly, all those exposed to the hazard receive the pay. As for more incentive oriented pays, in most cases quality has been measured through other means, i.e., at the time of initial entry into the field; through performance and, therefore, continuing progress within the field; via reenlistment or discharge actions along the way. All of these hinge on quality assessments that are unrelated to monetary rewards, except very indirectly.

Eligibility for reenlistments is normally determined through a screening process, e.g., by a special board in the Air Force. If individuals who are selected for reenlistment choose to do so and their career fields have an active Selective Reenlistment Bonus program, all who reenlist will receive the bonus. The fact that the bonus is available may have influenced some, but how many individuals would have reenlisted without it? For example, Air Force first term and retirement eligible members, prior to the expiration of their enlistment, are all automatically screened by a local command board to determine suitability for reenlistment. Like the other Services, the Air Force has maintained fairly strict standards. The member does not have the option of accepting a monetary bonus until that satisfactory board screening. Therefore, for those whose decision to reenlist may be influenced by the Selective Reenlistment Bonus (SRB), only those of already acceptable quality are offered a bonus. There is not, however, a distinction made between the quality or performance of members within the "acceptable/recommended for reenlistment" category. (The Air Force has recently announced plans to extend this reenlistment board screening to all personnel.) Other pays, like Hostile Fire Pay and Certain Places Pay, is based on conditions of assignment in which all members experiencing those conditions receive the pay.

This is not to suggest that the QPMC believes that it is inappropriate to address quality through the use of S&I Pays. Simply, that at the present time, in most cases, there is only a tenuous and indirect relationship.

It is clear from the data presented in the analysis section that the Services accessed during 1976-1980 many personnel who had lower AFQT scores than those in the career force. It is also clear that the propensity to reenlist and remain in the Services is higher for lower AFQT category personnel. This trend is neither unexpected nor necessarily totally undesirable. Within many civilian companies the reliable, steady performer, though of lower ability or aptitude, is likely to remain at the same or slightly higher level of employment with a given company for many years and is probably the backbone of their blue collar workforce. Similar individuals in the military will show the same propensity to stay, particularly if the earlier promotions have been attained and the pay is good relative to their civilian counterparts.

Hence, it is recognized that lower category personnel, if properly trained and motivated, will often become solid, productive members for whom "quality assessment" should be based upon their recent performance and service potential, just as it should be for all personnel beyond their first enlistment. The key is to find the right mix which will provide the combination of leaders, middle managers, and others that will make the system work. Therefore, the current increase in Category IV may or may not portend some serious problems depending on whether they are properly understood and effectively managed. Effective management may take the form of either examination of reenlistment standards or decisions about specific utilization of such personnel.

The complex issue with respect to military personnel management is that the military is a closed system with entry from the bottom and an up-or-out philosophy. Thus, proper use of the Enlistment Bonus is important because it is the one S&I Pay that does bear a direct relationship to quality at the initial point of entry (the base on which the closed system is structured). It may be that other S&I Pays can also play a more direct role in assisting the development of a quality force. The question is, should they? The answer -- possibly, but we simply are not sure. We are not suggesting that monetary rewards in the form of S&I Pays control quality; however, they may be able to contribute to the quality screening process in some instances. At this point, there is insufficient data to make that determination; further study is definitely required.

Among other aspects, such a study should examine specific impacts of the large increase of personnel scoring in AFQT Category IV who entered in the 1976-80 period. While the Services may have, as a result of enforcement of strict reenlistment standards, reduced the number of Category IV personnel in the last year or two, it is clear that substantial numbers of such personnel will enter the career force. The Service requirements should be reexamined. The mechanism in each Service to screen personnel prior to reenlistment and the actual success of these mechanisms must be studied. Most important, the actual performance of these individuals must be examined. Of equal or greater concern to the increase in Category IV personnel is the decrease in Category I & II

personnel and their higher propensity to leave the service. In addition, the distribution of both high and low scoring servicemembers within occupational fields, must be reviewed.

During this review we have, along with others, identified several trends which may suggest a decrease in the quality of our force. While precise measures of the various facets of quality are elusive, AFQT scores do provide a common measure, across Services and time, that is both useful and instructive. In our examination of AFQT scores, the presence of a "bow wave," resulting from the 1976-1980 period when the Services experienced an increase of Category IV personnel with accompanying high retention rates, stands out. The extent to which the "bow wave" impacts on our career force remains to be seen. Certainly, we have the capabilities to reduce its negative impact and should be willing to take appropriate steps.

The S&I Pays are effective management tools at our disposal, both for dealing with existing quality problems and with those which may arise as a result of changes in the demographic composition of the youth population and improvements in the marketplace. A robust S&I Pay policy, one which is tied -- whenever possible -- to well-defined quality standards is within our grasp. We would urge that a study be undertaken, as quickly as possible, to address the relationship between S&I Pays and quality force considerations.

VI. FINDINGS.

A. There are many indicators which can be used to assess the capabilities, abilities and skills, or "quality," of military personnel to perform their missions. Comparative analyses, across Services and over time are difficult, since "quality" is a function of accession and reenlistment policies, training, experience and performance as developed by the individual Services and reinforced by promotion systems.

B. Currently, most S&I Pays bear only indirect relationships to the issue of quality. The Services control their own "quality destiny" through various force management devices. These include Service-specific entry standards, promotion systems, and policies governing reenlistments and discharges. The S&I Pays are viewed as management tools -- used to "fine tune" the system, after other management techniques have been employed. However, a robust S&I Pay policy, one which is tied -- whenever possible -- to well-defined quality standards may assist in maintaining and improving the quality profile desired.

C. The quality of accessions, as measured by educational attainment and AFQT, has shown significant improvement since the low point of 1979.

D. Given the increased number of 1976-1980 accessions scoring in AFQT Category IV, there is a potential "bow wave" of these personnel should they exhibit higher retention rates than desired by the Services.

E. Across various measures examined in this review, there is a suggestion that a decrease in the quality of the career force can be expected if the Services ignore the Category IV problem in their reenlistment policies; an oversight which they are not likely to let happen, but a problem which should be closely monitored.

F. There is a need to maintain adequate compensation and to ensure that the Services have flexibility in both Special and Incentive Pays and in manpower policies to address potentially adverse shifts in the quality of personnel.

G. An in-depth study which would determine what impact Special and Incentive Pays have or should have on quality force considerations is required. While on-going studies of accession and attrition may bear on this issue, special attention should be paid to retaining quality personnel, via S&I Pays, currently in the force.

VII. RECOMMENDATION.

The Department of Defense should pursue an in-depth study of the existing and potential relationships between Special and Incentive Pays and the attraction and retention of quality personnel.

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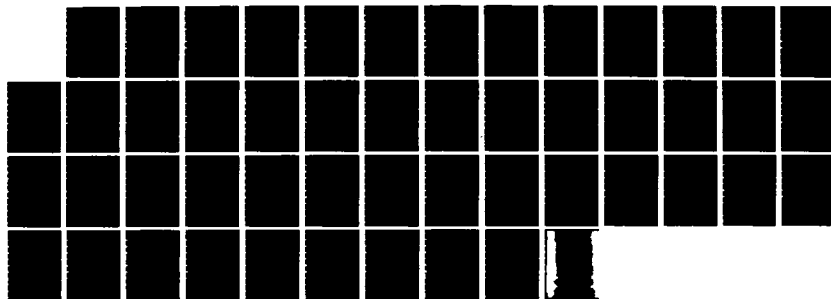
QUADRENNIAL REVIEW OF MILITARY COMPENSATION (5TH)
VOLUME 3 SPECIAL AND INCENTIVE PAYS(U) OFFICE OF THE
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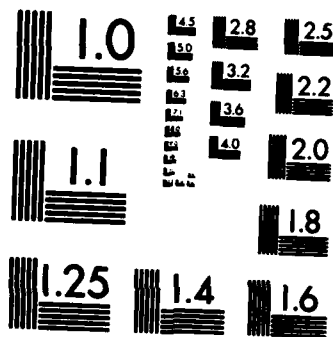
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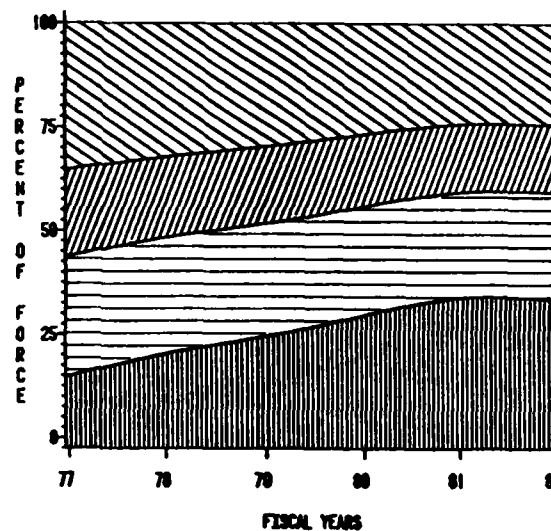
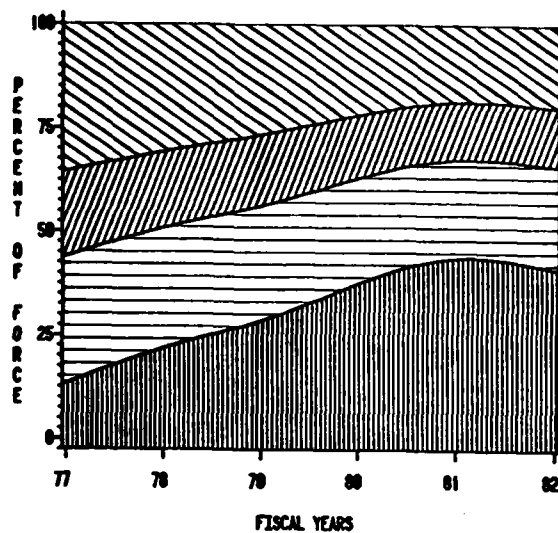
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ARMY ENLISTED BY AFQT CATEGORY

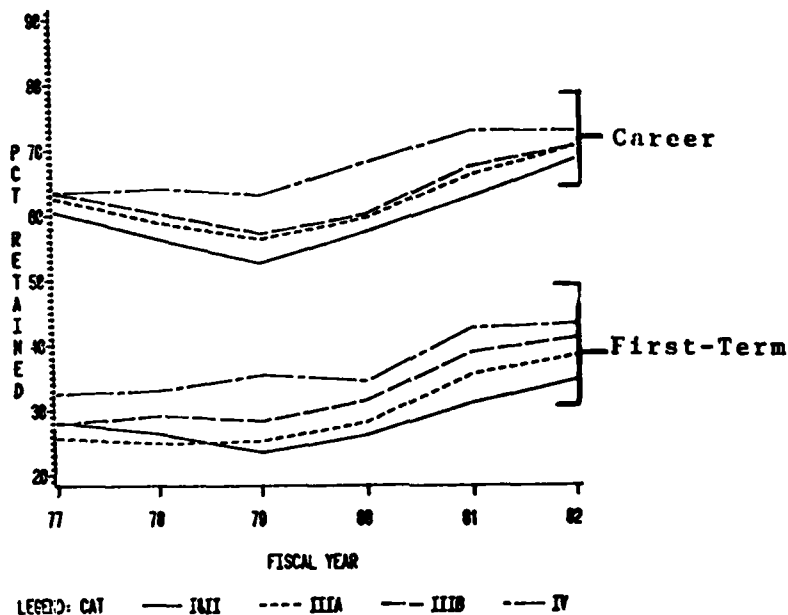
0 TO 4 YEARS OF SERVICE

0 TO 30+ YEARS OF SERVICE



LEGEND: CATEGORY: I&II IIIA IIIB IV

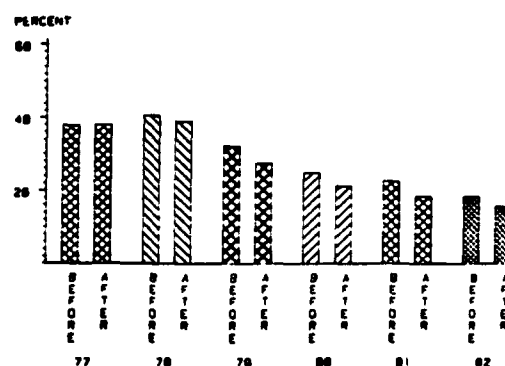
ARMY RETENTION AT ETS



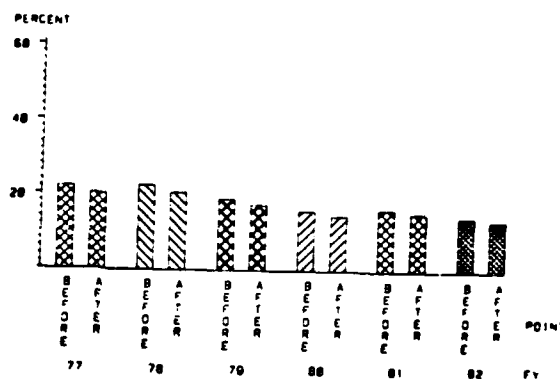
LEGEND: CAT — I&II - - - IIIA - - - IIIB - - - IV

ARMY AFQT CATEGORY DISTRIBUTION BEFORE AND AFTER ETS--1ST TERM

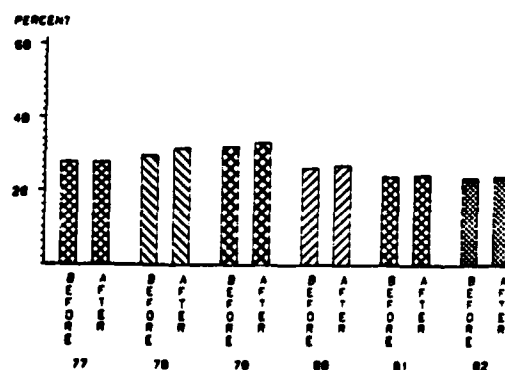
CAT=I&II



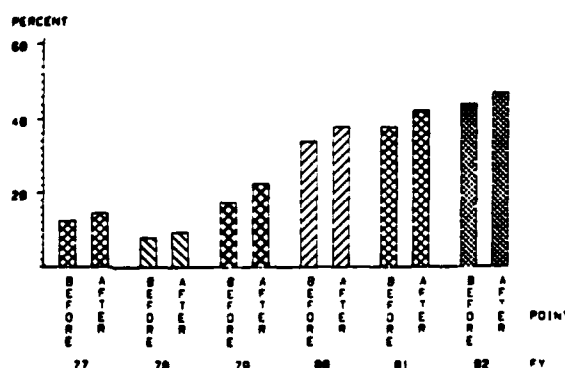
CAT=IIIA



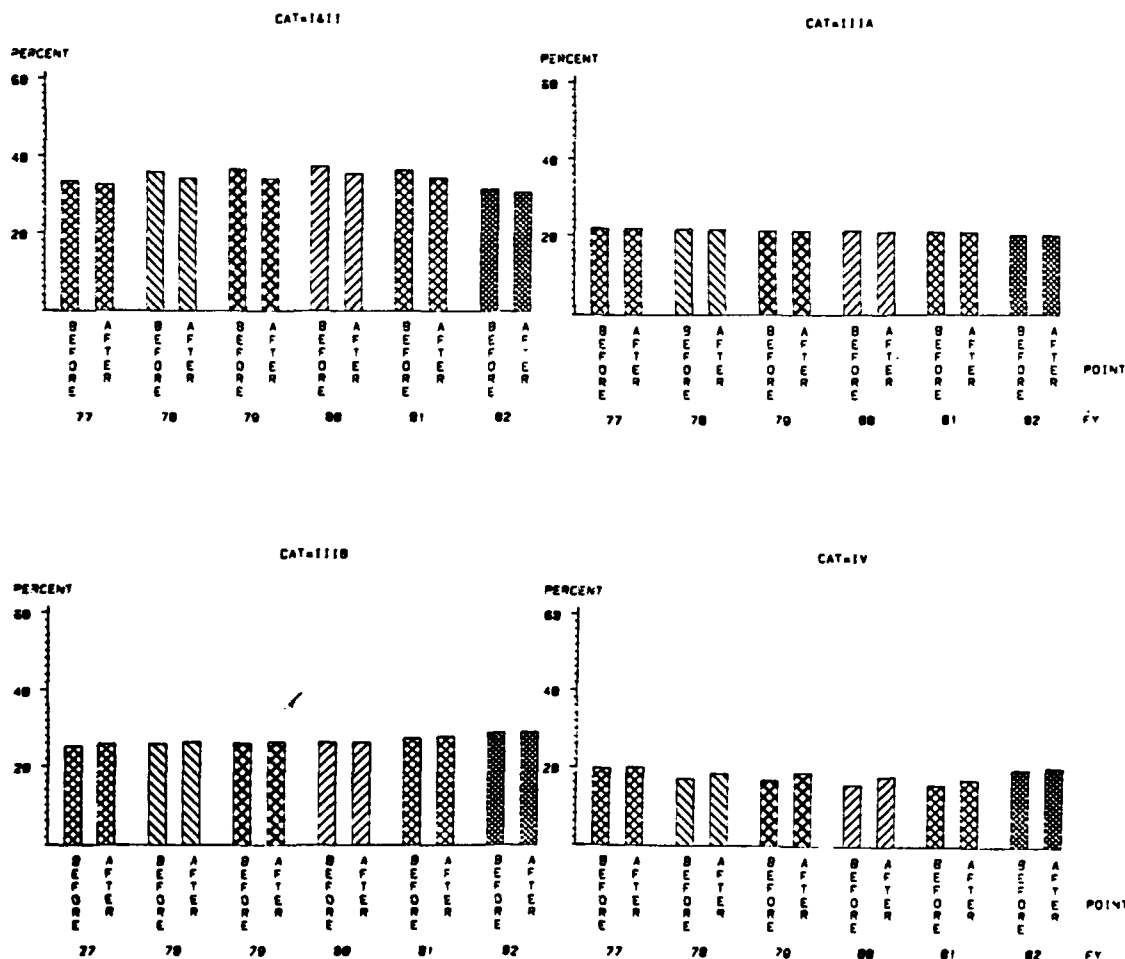
CAT=IIIB



CAT=IV



ARMY AFQT CATEGORY DISTRIBUTION BEFORE AND AFTER ETS--CAREER



Army
AFQT Category Distribution
(Percent)

Table A-1

0 to 30+ Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	35.2	20.9	29.0	14.9
78	32.2	19.5	27.9	20.4
79	29.7	18.6	27.2	24.6
80	26.7	17.4	26.1	29.8
81	24.2	16.4	25.3	34.0
82	24.3	16.4	25.9	33.4

Table A-2

0 - 4 Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	35.5	20.6	30.6	13.3
78	30.7	18.5	28.9	21.9
79	26.6	17.1	27.6	28.6
80	21.8	15.2	25.3	37.7
81	18.6	14.0	23.6	43.9
82	19.8	14.2	24.7	41.2

Table A-3

5 - 20 Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	34.6	21.9	25.3	18.3
78	35.2	21.7	25.7	17.4
79	35.3	21.5	25.9	17.3
80	35.2	21.5	26.9	16.5
81	33.8	20.6	27.8	17.9
82	31.0	19.4	27.4	22.1

Table A-4
Army Retention at ETS by AFQT Category*

0 to 4 Years of Service

Cat:	I & II			IIIA			IIIB			IV		
FY:	<u>Begin</u>	<u>End</u>	<u>Rate</u>	<u>Begin</u>	<u>End</u>	<u>Rate</u>	<u>Begin</u>	<u>End</u>	<u>Rate</u>	<u>Begin</u>	<u>End</u>	<u>Rate</u>
77	38620	10846	28	22531	5770	26	28372	7917	28	12693	4130	33
78	33856	8927	26	18901	4097	25	24773	7217	29	6571	2170	33
79	31829	7479	23	18744	4733	25	31814	9006	28	17374	6157	35
80	23855	6240	26	15064	4239	28	25213	7937	31	32397	11140	34
81	17414	5422	31	12547	4460	36	18451	7180	39	29250	12475	43
82	13787	4770	35	10585	4059	38	17726	7272	41	33216	14349	43

Table A-5

5 to 30+ Years of Service

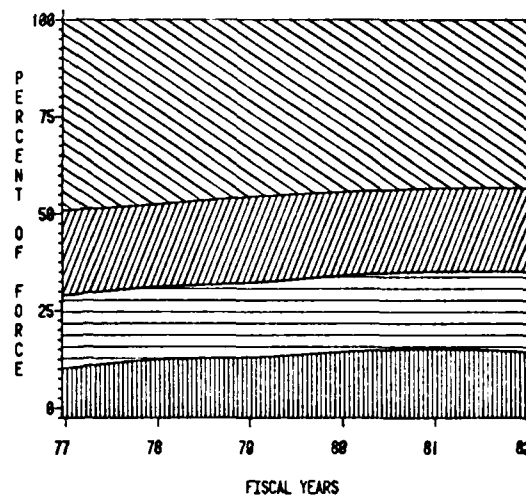
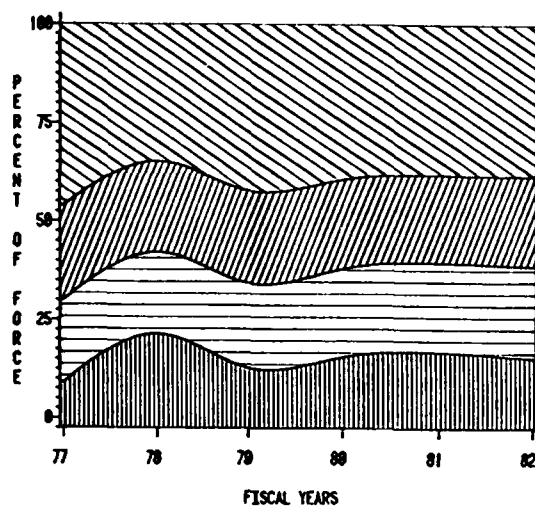
Cat:	I & II			IIIA			IIIB			IV		
FY:	<u>Begin</u>	<u>End</u>	<u>Rate</u>	<u>Begin</u>	<u>End</u>	<u>Rate</u>	<u>Begin</u>	<u>End</u>	<u>Rate</u>	<u>Begin</u>	<u>End</u>	<u>Rate</u>
77	15275	9226	60	9850	6150	62	11495	7280	63	8968	5687	63
78	10956	9557	56	10127	5956	59	12180	7338	60	8095	5184	64
79	16823	8858	53	9710	5467	56	11966	6843	57	7801	4918	63
80	19188	11001	57	10777	6413	60	13563	8148	60	8150	5546	68
81	20291	12742	63	11556	7645	66	15285	10315	67	8799	6414	73
82	19415	13303	69	12231	8616	70	17749	12529	71	12185	8869	73

*Category unknowns excluded from strengths.

NAVY ENLISTED BY AFQT CATEGORY

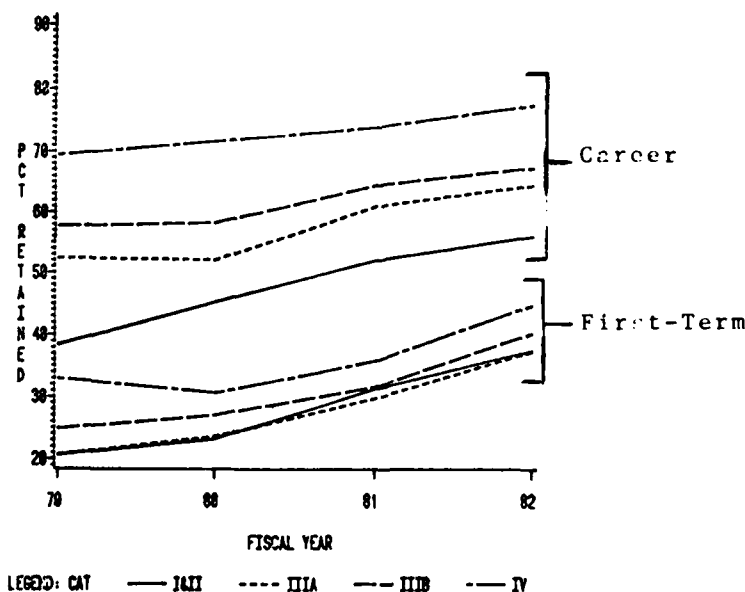
0 TO 4 YEARS OF SERVICE

0 TO 30+ YEARS OF SERVICE

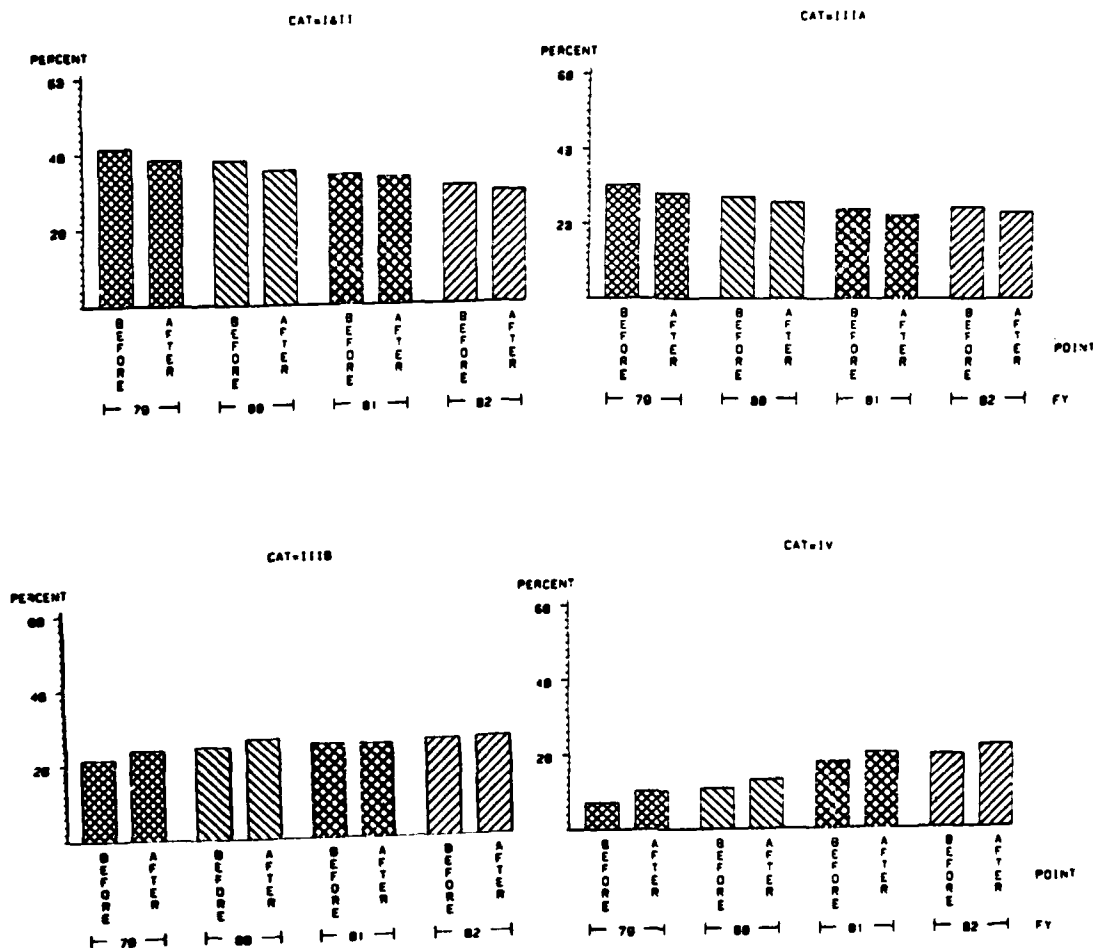


LEGEND: CATEGORY: I&II IIIA IIIB IV

NAVY RETENTION AT ETS



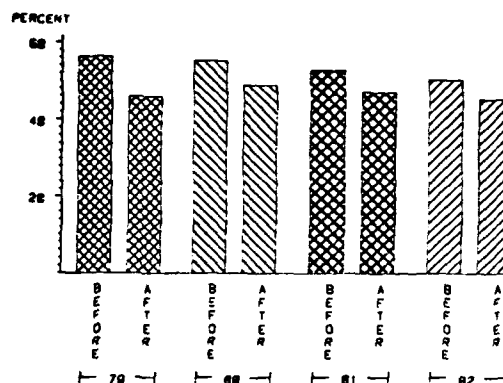
NAVY AFQT CATEGORY DISTRIBUTION BEFORE AND AFTER ETS--1ST TERM



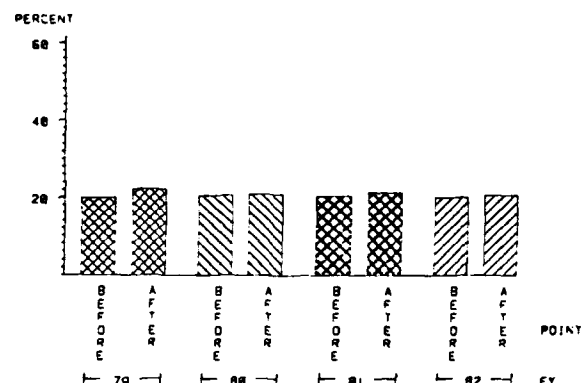
NAVY AFQT CATEGORY DISTRIBUTION

BEFORE AND AFTER ETS--CAREER

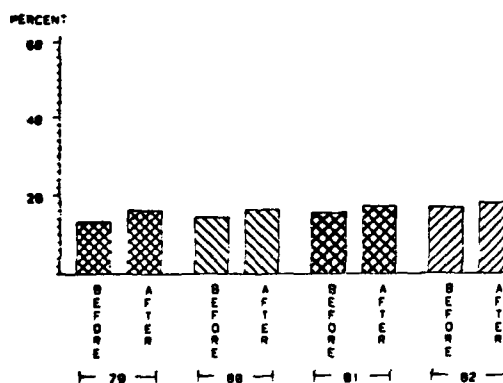
BEFORE AND AFTER ETS--CAREER
CAT=I&II



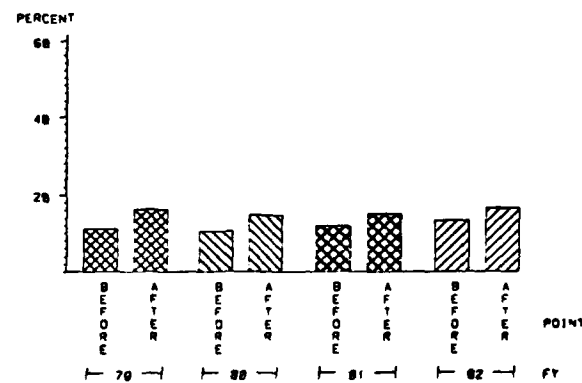
BEFORE AND AFTER ETS--CAREER
CAT=IIIA



BEFORE AND AFTER ETS--CAREER
CAT=IIIB



CAT=IV



NAVY
AFQT Category Distribution
(Percent)

Table B-1

0 - 30 Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	49.1	21.8	18.9	10.1
78	47.5	21.4	18.9	10.1
79	45.6	22.2	19.2	13.0
80	44.3	21.7	19.7	14.4
81	43.3	21.6	20.0	15.1
82	43.3	21.7	20.6	14.4

Table B-2

0 - 4 Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	46.1	23.9	21.0	9.0
78	43.8	23.1	20.7	12.4
79	42.2	23.5	21.5	12.9
80	39.4	22.6	22.4	15.6
81	38.2	22.3	22.6	16.9
82	38.5	22.7	23.3	15.5

Table B-3

5 - 20 Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	54.2	18.8	15.3	11.8
78	53.5	18.8	15.2	12.4
79	53.9	19.1	13.7	13.3
80	53.1	19.7	14.7	12.5
81	52.5	19.9	15.2	12.3
82	51.1	19.9	16.2	12.9

Table B-4
Navy Retention at ETS by AFQT Category*
(rates rounded to nearest percent)

0 to 4 Years of Service

Cat:	I & II			IIIA			IIIB			IV		
	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate
79	14910	3075	21	10978	2270	21	7764	1929	25	2498	821	33
80	14719	3409	23	10600	2498	24	9488	2563	27	4169	1274	31
81	14654	4576	31	10326	3068	30	10789	3409	32	7695	2756	36
82	10637	3996	38	8427	3147	37	8832	3557	40	6696	2997	45

Table B-5

5 to 30+ Years of Service

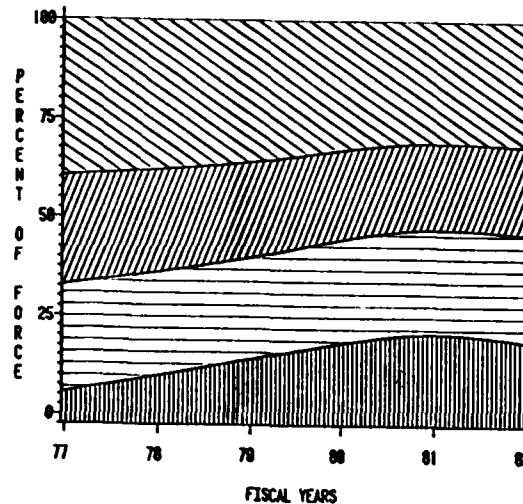
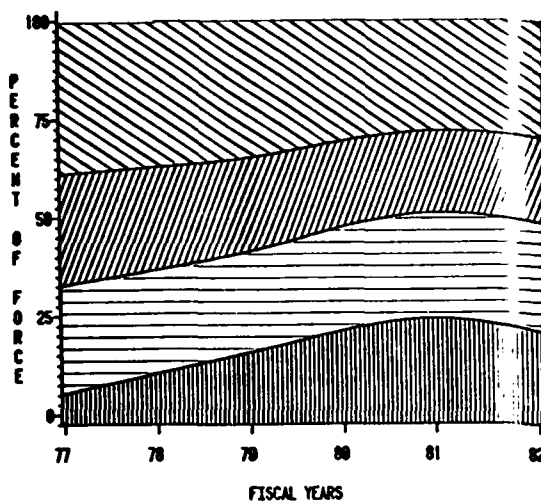
Cat:	I & II			IIIA			IIIB			IV		
	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate
79	14874	5708	38	5285	2765	52	3473	2004	58	2930	2035	69
80	21935	9920	45	8148	4240	52	5691	3317	58	4189	3003	72
81	22798	11858	52	8827	5388	61	6657	4295	65	5143	3805	74
82	21593	12120	56	8572	5533	65	7137	4811	67	5705	4422	78

*Category unknowns and all FY77-FY78 were excluded due to lack of data.

USMC ENLISTED BY AFQT CATEGORY

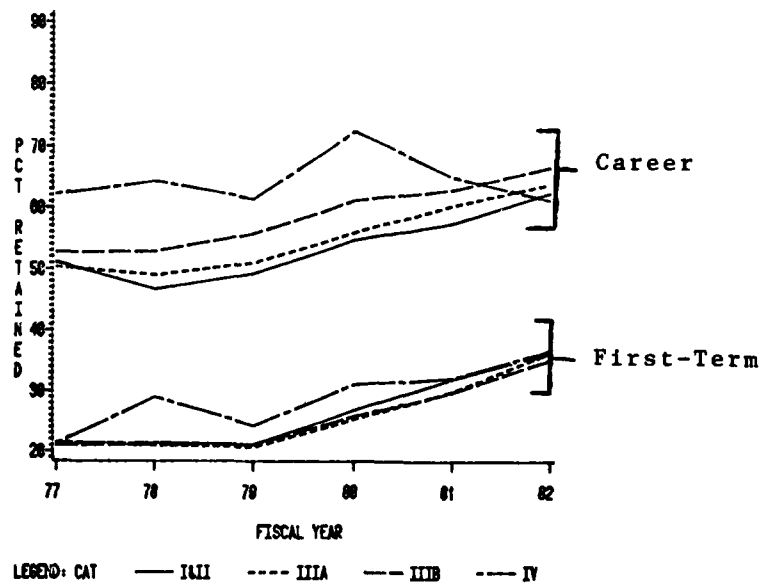
0 TO 4 YEARS OF SERVICE

0 TO 30+ YEARS OF SERVICE

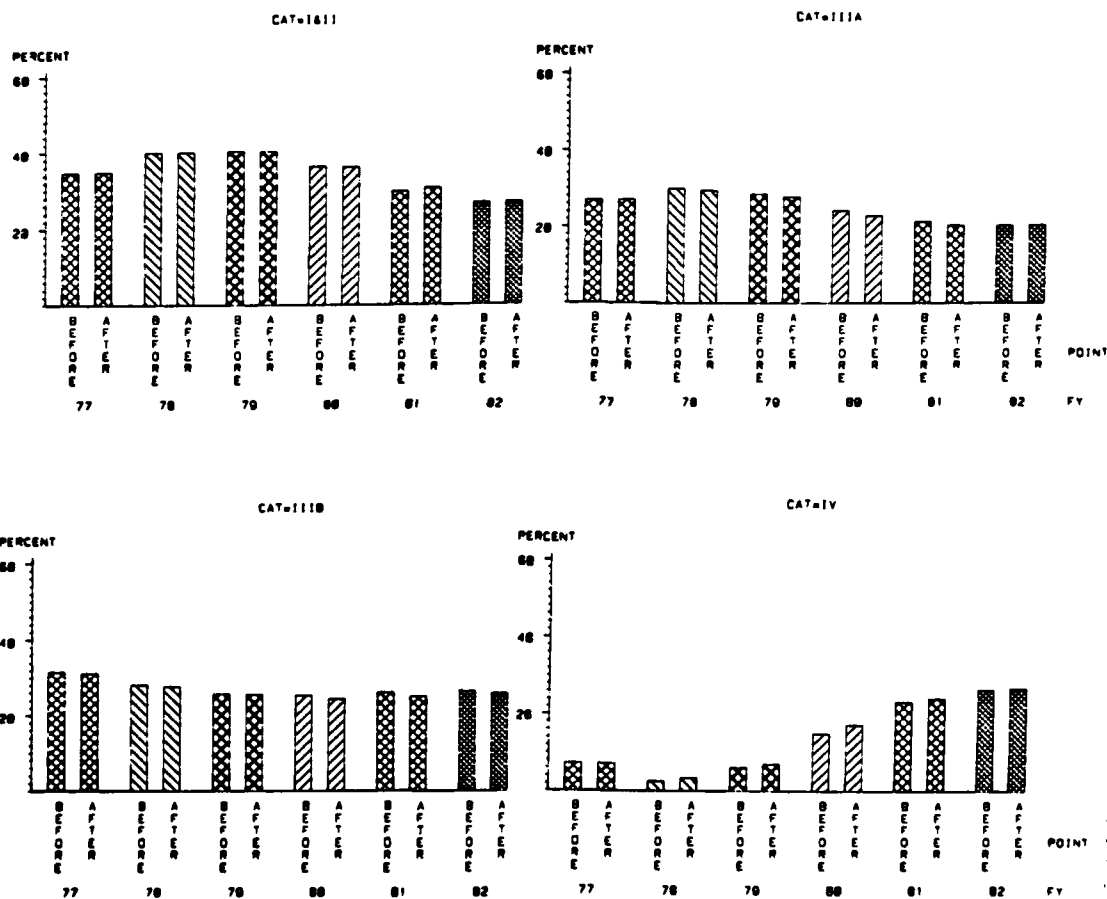


LEGEND: CATEGORY: I&II IIIA IIIB IV

USMC RETENTION AT ETS

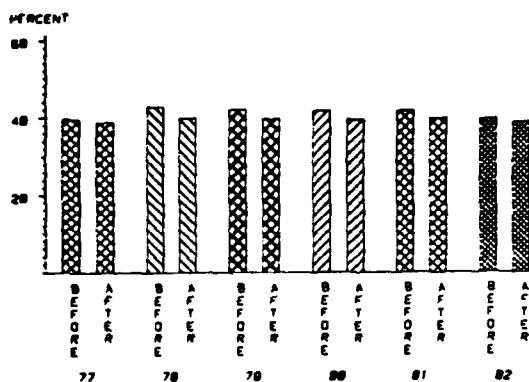


USMC AFQT CATEGORY DISTRIBUTION BEFORE AND AFTER ETS--1ST TERM

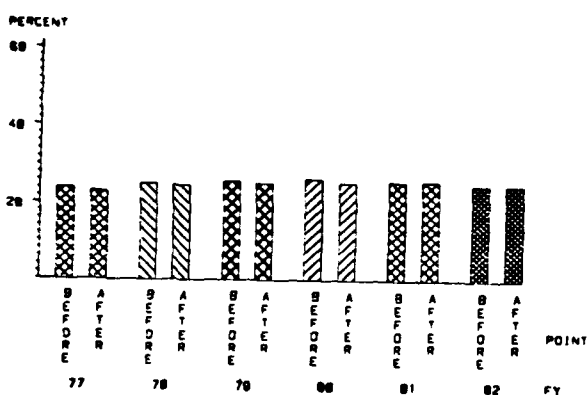


USMC AFQT CATEGORY DISTRIBUTION BEFORE AND AFTER ETS--CAREER

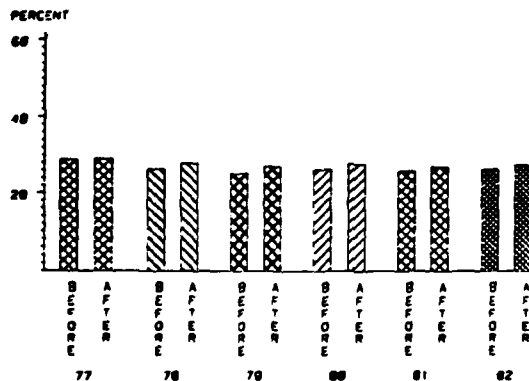
CAT-I&II



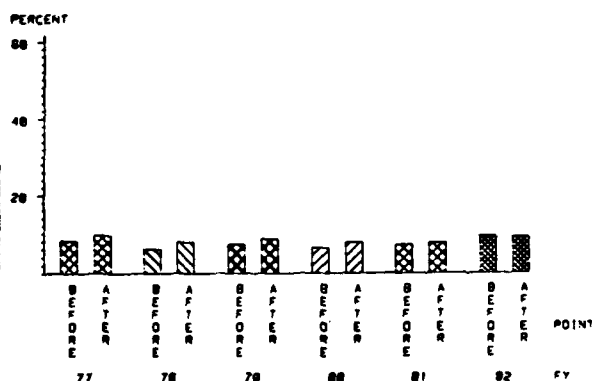
CAT-III



CAT-III B



CAT-IV



MARINE CORPS
AFQT Category
(Percent)

Table C-1

0 - 30+ Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	39.5	27.7	27.2	5.6
78	37.9	26.0	26.2	9.9
79	35.9	24.2	25.7	14.3
80	35.7	22.7	26.2	18.4
81	30.9	21.9	26.5	20.8
82	31.7	22.4	27.1	18.8

Table C-2

0 - 4 Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	38.9	28.3	27.4	5.4
78	37.1	26.1	26.3	10.5
79	34.8	23.8	25.6	15.8
80	30.6	21.8	26.3	21.9
81	28.0	20.9	26.8	24.3
82	29.3	21.8	27.6	21.3

Table C-3

5 - 20 Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	42.5	24.6	26.1	6.9
78	41.7	25.2	26.1	6.9
79	41.3	25.7	26.1	6.9
80	41.7	26.4	25.9	5.9
81	41.7	25.8	25.5	7.1
82	39.5	24.4	25.7	10.4

Table C-4
USMC Retention at ETS by AFQT Category*
(all rates rounded)

0 to 4 Years of Service

Cat:	I & II			IIIA			IIIB			IV		
	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate
77	8139	1741	21	6307	1353	21	7414	1553	21	1090	360	21
78	8302	1773	21	6203	1300	21	5842	1231	21	518	150	29
79	11717	2480	21	8311	1715	21	7506	1578	21	1786	433	24
80	9736	2615	27	6511	1649	25	6797	1758	26	4010	1250	31
81	7789	2494	32	5541	1657	30	6806	2026	30	6077	1955	32
82	6825	2472	36	3168	1878	36	6715	2362	35	6701	2459	37

Table C-5

5 to 30+ Years of Service

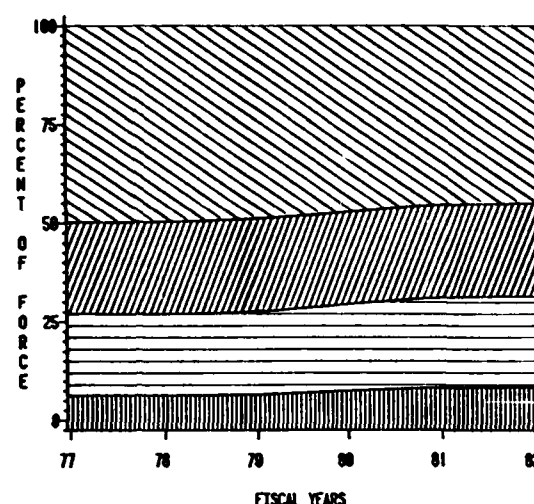
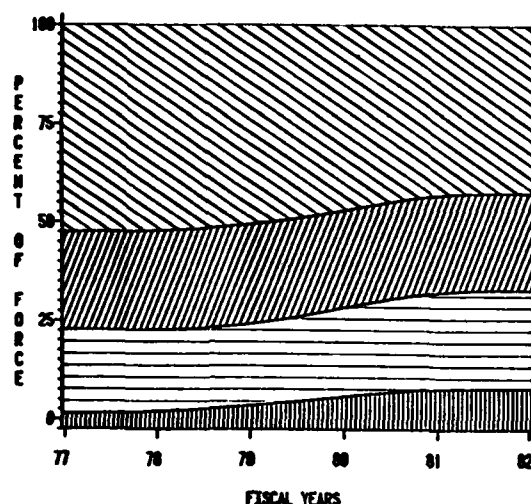
Cat:	I & II			IIIA			IIIB			IV		
	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate
77	2114	1080	51	1281	644	50	1535	809	53	428	266	62
78	3094	1445	47	1831	897	49	1912	1010	53	442	284	64
79	3807	1874	49	2353	1201	51	2284	1273	56	667	409	61
80	3811	2085	55	2426	1357	56	2401	1468	61	581	421	72
81	4371	2515	56	2719	1642	60	2705	1702	63	760	494	65
82	4011	2505	62	2542	1623	64	2665	1776	67	961	588	61

*Category unknowns excluded from strengths.

USAF ENLISTED BY AFQT CATEGORY

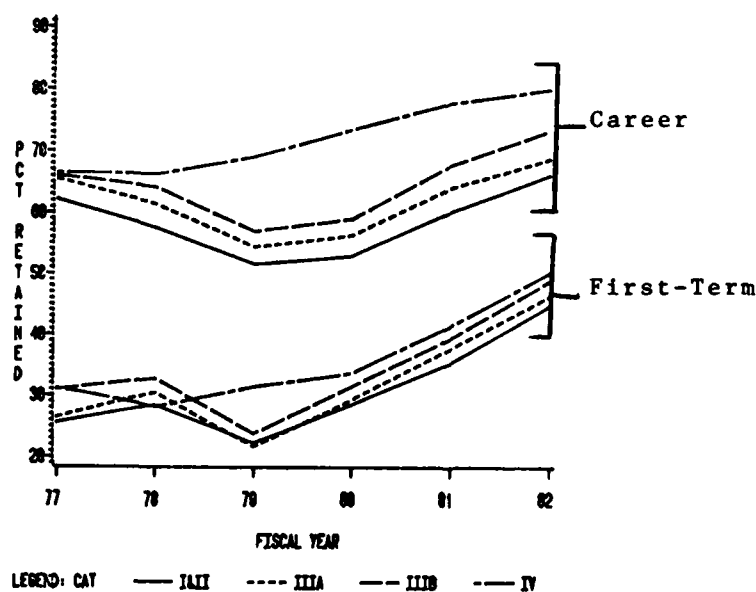
0 TO 4 YEARS OF SERVICE

0 TO 304 YEARS OF SERVICE



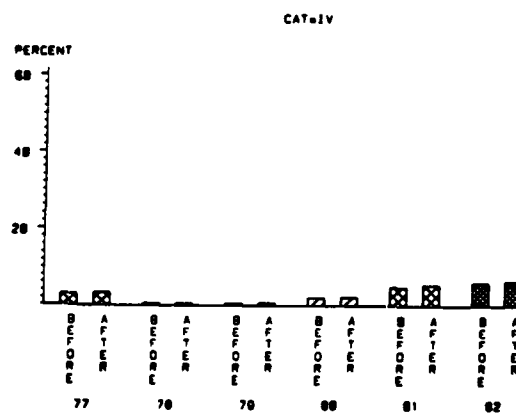
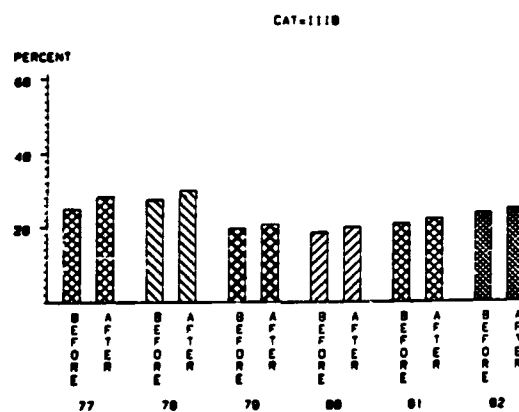
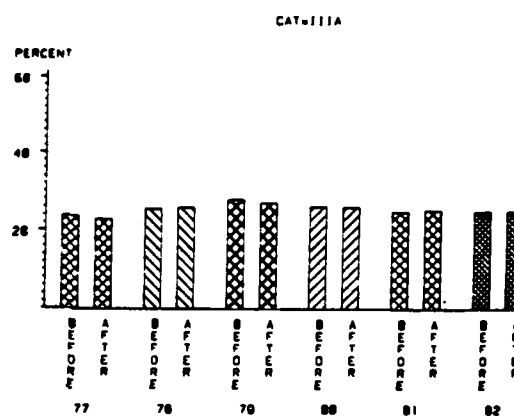
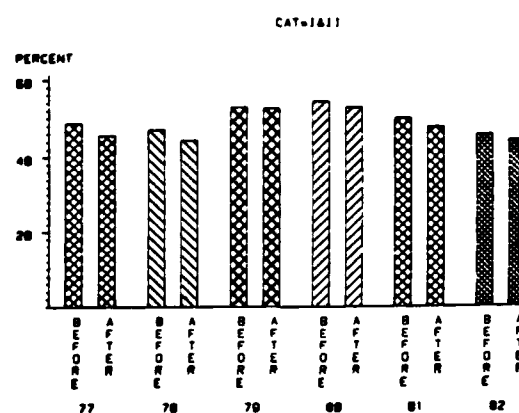
LEGEND: CATEGORY: I&II IIIA IIIB IV

USAF RETENTION AT ETS

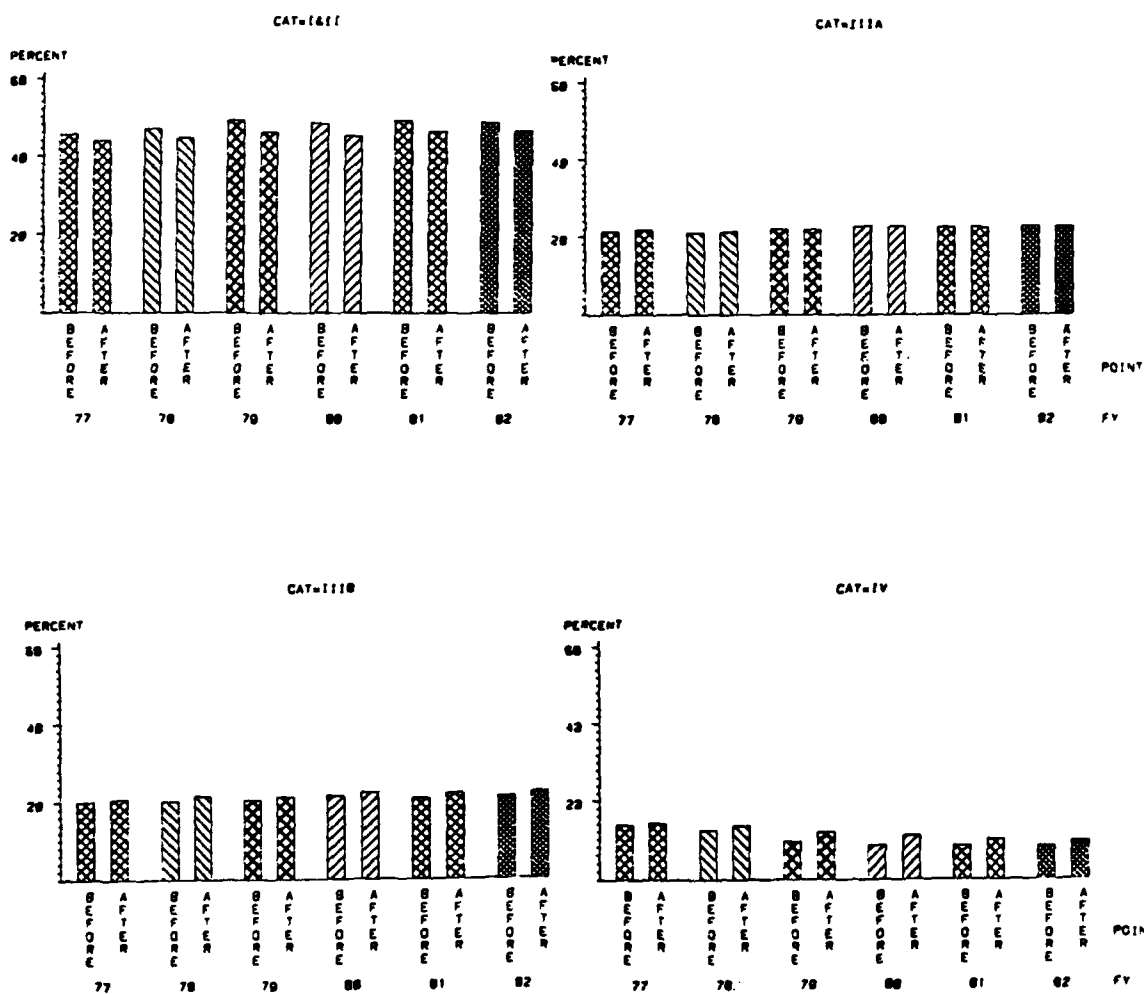


LEGEND: CAT I&II IIIA IIIB IV

USAF AFQT CATEGORY DISTRIBUTION BEFORE AND AFTER ETS--1ST TERM



USAF AFQT CATEGORY DISTRIBUTION BEFORE AND AFTER ETS--CAREER



AIR FORCE
AFQT Category - %

Table D-1

0 - 30+ Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	49.7	23.3	20.7	6.3
78	49.6	23.4	20.6	6.4
79	48.8	23.6	21.0	6.6
80	47.1	23.5	21.9	7.5
81	45.5	23.5	22.9	8.2
82	45.0	23.6	23.1	8.3

Table D-2

0 - 4 Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	52.5	24.8	21.3	1.4
78	52.2	25.2	20.6	2.1
79	50.5	25.3	20.6	3.5
80	46.9	24.7	22.5	5.6
81	43.1	24.6	24.6	7.8
82	42.4	24.6	24.9	8.1

Table D-3

5 - 20 Years of Service

Cat:	I & II	IIIA	IIIB	IV
FY:				
77	45.9	21.1	20.0	13.0
78	46.5	21.3	20.8	11.5
79	46.7	21.6	21.7	10.1
80	47.4	22.0	21.5	9.2
81	48.2	22.1	21.1	8.6
82	48.1	22.3	21.2	8.4

Table D-4
USAF Retention at ETS by AFQT Category*
(rates rounded to nearest percent)

0 to 4 Years of Service

Cat:	I & II			IIIA			IIIB			IV		
	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate
77	13360	3408	26	6505	1717	26	6830	2133	31	802	249	31
78	8730	2481	28	4749	1440	30	5098	1669	33	96	27	28
79	14372	3203	22	7599	1647	22	5297	1260	24	121	38	31
80	17584	5015	29	8430	2466	29	5978	1879	31	620	209	34
81	15802	5582	35	7869	2965	38	6571	2585	39	1539	637	41
82	14440	6463	45	7863	3640	46	7407	3615	49	1906	956	50

Table D-5

5 to 30+ Years of Service

Cat:	I & II			IIIA			IIIB			IV		
	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate
77	14069	8738	62	6603	4321	65	6217	4100	66	4171	2770	66
78	13064	7511	57	5863	3597	61	5638	3617	64	3409	2258	66
79	15774	8141	52	7070	3845	54	6566	3739	57	2952	2039	69
80	18319	9094	53	8628	4859	56	8101	4781	59	3122	2293	73
81	19486	11730	60	8860	5680	64	8213	5562	68	3199	2487	78
82	19296	12770	66	8981	6177	69	8363	6128	73	3127	2503	80

*Category unknowns excluded.

Number of Personnel
In DoD Occupational
Field by Service - 1982 (000)

<u>DoD Occup Code</u>	<u>Discription</u>	<u>Army</u>	<u>Navy</u>	<u>Air Force</u>	<u>Marine Corps</u>	<u>DoD</u>
0	Infantry, Gun crews, & Sea- manship Spec.	162	16	30	40	248
1	Electronic Equip. Repairman	32	60	56	8	156
2	Comm. & Intel. Spec.	74	40	32	11	158
3	Medical & Dental Spec.	38	25	19	-	82
4	Other Technical & Allied Spec.	16	5	16	3	41
5	Functional Support & Admin	119	47	99	24	288
6	Electrical/Mech. Equip Repair	104	122	107	27	361
7	Craftsmen	17	26	25	5	73
8	Service & Supply Handler	78	26	42	21	167
9	Non-Occupational (Students & Recruits Prisoners, etc.,)	<u>34</u>	<u>102</u>	<u>40</u>	<u>33</u>	<u>209</u>
TOTAL		674	469	466	172	1,783

DoD Retention at ETS by AFQT Category*
(rates rounded to nearest percent)

0 to 4 Years of Service

Cat:	I & II			IIIA			IIIB			IV		
FY:	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate
77	60119	15995	27	35343	8840	25	42616	11583	27	15185	4739	31
78	50888	13181	26	29853	7443	25	35713	10117	28	7185	2347	33
79	72828	16237	22	45632	10365	23	52381	13773	26	21779	7449	34
80	65894	17279	26	40605	10852	27	47476	14137	30	41196	13873	34
81	55659	18074	32	36283	12150	33	42617	15200	36	44561	17823	40
82	45689	17701	39	32043	12724	40	40680	16806	41	48519	20761	43

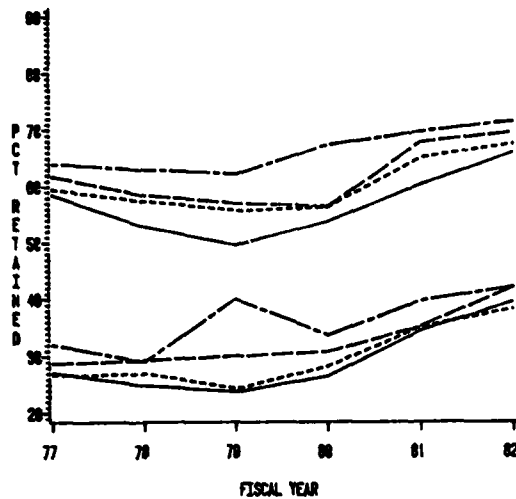
5 to 30+ Years of Service

Cat:	I & II			IIIA			IIIB			IV		
FY:	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate	Begin	End	Rate
77	31458	19044	61	17734	11115	63	19247	12189	63	13567	8723	64
78	33114	18513	56	17821	10450	59	19730	11965	61	11946	7726	65
79	51278	24581	48	24418	13278	54	24289	13859	57	14350	9401	66
80	63253	32700	52	29979	16869	56	29756	17714	60	16042	11263	70
81	66946	38845	58	31962	20355	64	32860	21874	67	17901	13200	74
82	64315	40698	63	32326	21949	68	35914	25244	70	21978	16382	75

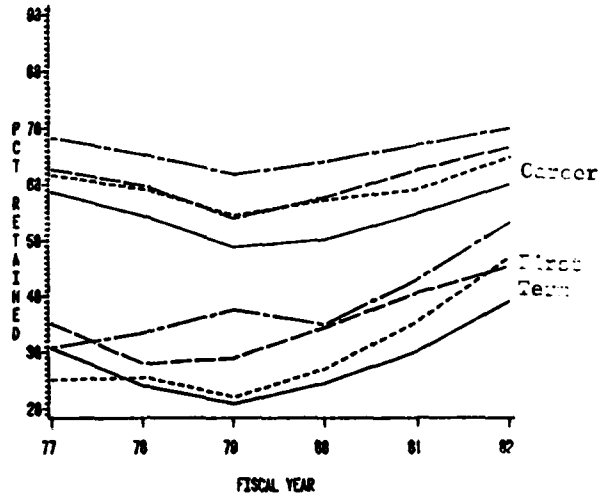
*Category unknowns not included.

DOD RETENTION AT ETS

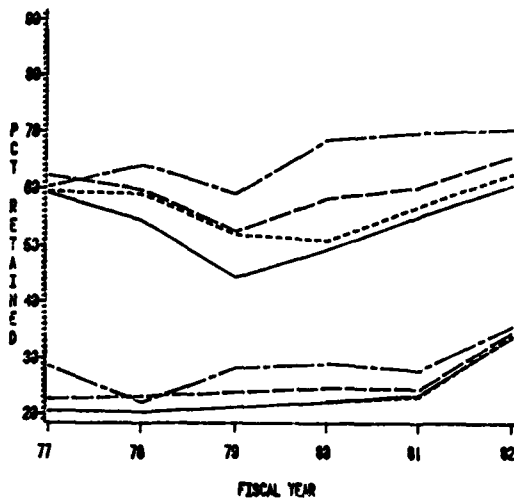
000-COMP/INTEL



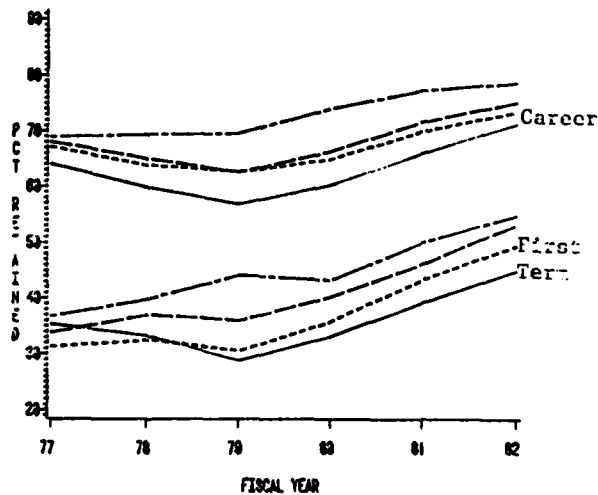
000-ED/DENTAL



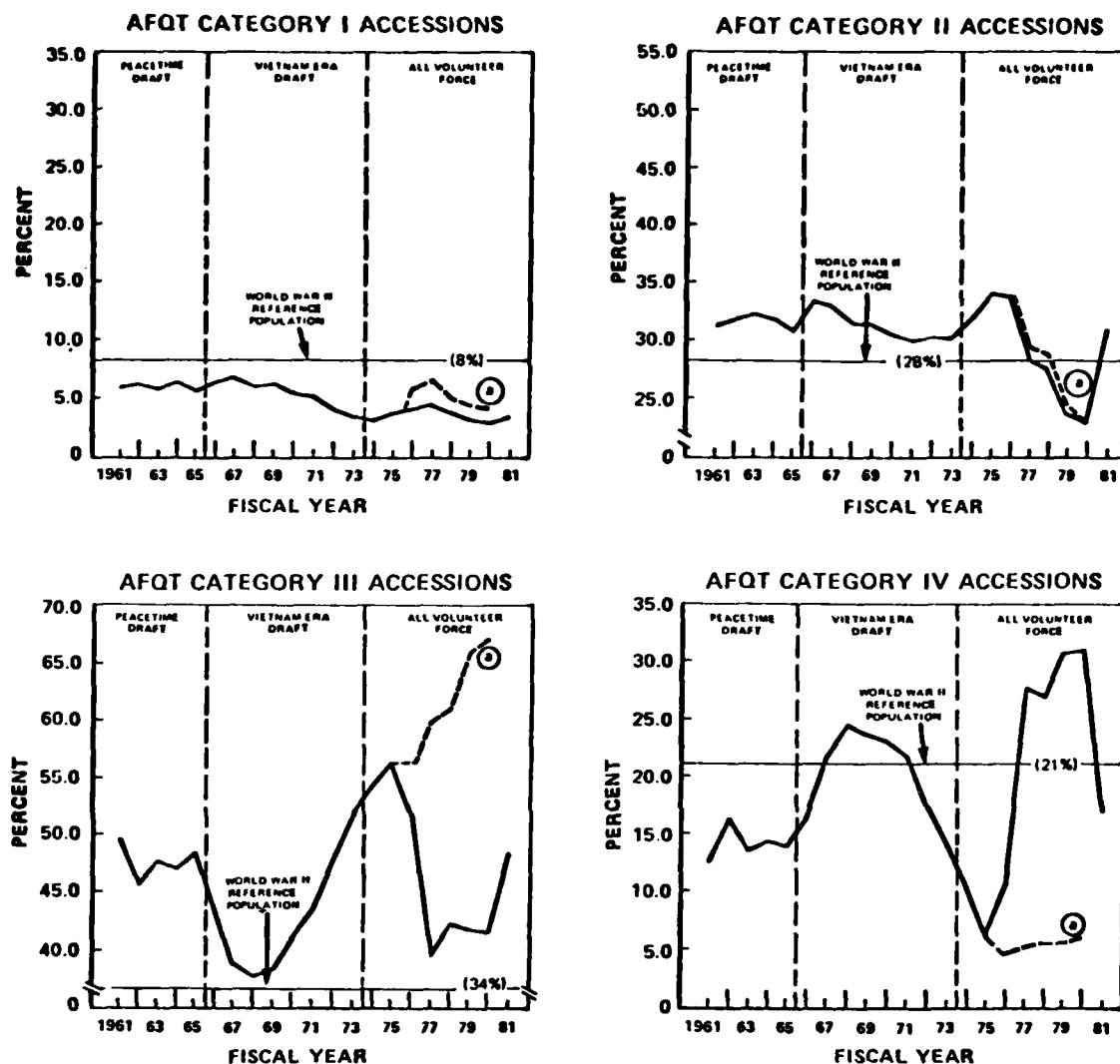
000-CRAFTSMEN



000-SUPP/AMNCH



LEGEND: CAT — I&II --- IIIA --- IIIB --- IV



Source: Data on 1961-70 accessions are from Office of Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics). Data on 1971-81 accessions provided by Defense Manpower Data Center. Detailed statistics appear in Table B-1, Appendix B.

⊙ Broken lines show the percentage of accessions scoring within the respective AFQT category, as originally reported prior to the discovery of test miscalibration. Solid lines for this period (FY 1976-80) reflect the percentage of accessions based on test scores that were later renormed.

Figure 1. Total DoD: Percentage Distribution of Nonprior Service Accessions by Armed Forces Qualification Test (AFQT) Category, Fiscal Years 1961-81.

1

AFQT CATEGORY MODEL AT ETS

YOS-2

DLP VARIABLE: RATE

0-4 Years of Service
First Term Personnel

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	5	12696.260	2537.252	19.423	0.0001
ERROR	822	113204	137.713		
C TOTAL	827	125891			
HOOT MSE		11.735345	R-SQUARE	0.1008	
DEP MEAN		29.381425	ADJ R-SQ	0.0953	
C.V.		41.34868			

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > T
INTERCEP	1	30.903913	0.896611	34.467	0.0001
CAT12	1	-1.575599	0.999979	-1.590	0.1144
CAT4	1	3.589514	0.999979	3.593	0.0002
AAV1	1	-6.511389	1.184351	-5.498	0.0001
MC	1	-6.673350	1.129234	-5.910	0.0001
AF	1	0.405944	1.129234	0.350	0.7197

2

AFQT CATEGORY AT ETS

YOS=7

DEP VARIABLE: RATE

4+ Years of Service
Career Personnel

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	5	44866.340	8973.265	32.129	0.0001
ERROR	922	229575	279.293		
C TOTAL	927	274441			
ROOT MSE		16.711912	R-SQUARE	0.1635	
DEP MEAN		55.907331	ADJ R-SQ	0.1594	
C.V.		29.36669			

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > T
INTERCEP	1	61.979507	1.276834	48.542	0.0001
CAT12	1	-3.678671	1.422612	-2.596	0.0099
CAT4	1	5.444903	1.422612	4.530	0.0001
NAVY	1	-14.363454	1.686594	-8.516	0.0001
MC	1	-10.562315	1.609105	-6.581	0.0001
AF	1	0.457545	1.603105	0.295	0.7761

DoD Military Absentees/Deserters
(FY74 - FY82)

<u>Service</u>	<u>Fiscal Year</u>	<u>Number of Absentee Incidents (30 days or less)</u>	<u>Average Enlisted Monthly End Strength Rate Per 1,000</u>	<u>Number of Deserter Incidents (over 30 days)</u>	<u>Average Enlisted Monthly End Strength Rate Per 1,000</u>
Army	74*	87,807	129.9	27,788	41.1
	75	64,018	95.4	17,966	26.0
	76**	47,180	70.3	11,883	17.7
	77	31,790	47.0	11,287	16.7
	78	26,964	40.4	10,301	15.4
	79	24,897	38.0	11,889	18.1
	80	27,733	41.6	13,129	19.6
	81	24,079	36.0	10,676	15.9
	82	18,511	27.3	7,396	11.0
Navy	74	25,948	53.8	10,208	21.2
	75	34,698	73.0	10,659	22.4
	76**	35,635	77.5	11,413	24.8
	77	35,348	76.9	14,539	31.6
	78	35,900	78.3	13,949	30.4
	79	38,200	83.4	13,552	29.6
	80	37,548	82.0	12,131	27.0
	81	36,375	77.9	10,181	21.8
	82	30,262	63.9	8,537	18.0
Air Force	74	11,585	17.3	1,667	2.4
	75	6,679	13.0	976	1.9
	76**	3,738	7.8	568	1.2
	77	1,779	3.8	267	.6
	78	2,165	4.6	323	.7
	79	2,765	5.9	494	1.1
	80	2,902	6.7	571	1.2
	81	2,346	5.2	442	1.0
	82	1,759	3.7	303	.6
Marine Corps	74	50,200	287.5	15,582	89.2
	75	52,719	300.9	18,396	105.0
	76**	35,503	201.8	12,153	69.2
	77	17,679	103.5	8,024	47.0
	78	16,772	97.5	6,858	39.9
	79	14,512	86.7	6,341	37.9
	80	13,864	83.6	5,675	34.2
	81	12,587	73.9	4,915	28.8
	82	11,349	65.4	3,448	21.1

(Continued on next page)

Military Absentees/Deserters
(FY68 - FY82)

<u>Service</u>	<u>Fiscal Year</u>	<u>Number of Absentee Incidents (30 days or less)</u>	<u>Average Enlisted Monthly End Strength Rate Per 1,000</u>	<u>Number of Deserter Incidents (over 30 days)</u>	<u>Average Enlisted Monthly End Strength Rate Per 1,000</u>
DoD					
	74	175,540	95.0	55,245	29.9
	75	158,114	86.6	47,997	26.3
	76**	122,056	68.2	36,017	20.1
	77	86,596	48.5	34,117	19.1
	78	81,801	46.0	31,431	18.0
	79	80,374	46.2	32,276	18.5
	80	82,353	46.8	31,576	17.9
	81	75,387	42.3	26,214	14.7
	82	61,881	34.3	19,684	10.9

* A slight distortion is present in the Army's figures due to there inclusion of officer incidents, which could not readily be excluded from the reported data.

** A change in reporting procedures discontinued the practice of counting individuals who departed AWOL and were later administratively determined to be deserters from appearing in both categories. There will be some variance between these data and the standard strength of the Army report (DCSPER 46, Part II), which continues to count individuals whose absence progresses to desertion as both an absentee and incident (double - counting).

NOTE: Cumulative Annual Incidents = Rate
Average of Enlisted Monthly End Strengths (Thousands)

OFFICER/ENLISTED DIFFERENTIAL

OFFICER/ENLISTED DIFFERENTIAL FOR
CERTAIN HAZARDOUS DUTY INCENTIVE PAYS

During the process of reviewing the various Hazardous Duty Incentive Pays, it became increasingly clear that, although there is some incentive associated with certain pays, the primary purpose is recognition for the hazards or risks involved. It was, therefore, believed that officer/enlisted personnel should receive the same level of payment for seven of the Hazardous Duty Incentive Pays: parachute, demolition, experimental stress, toxic fuels, toxic pesticides, flight deck, and flight - non-crewmember. Based on the concerns (pro and con) of the Services (see summary of responses at Appendix A) regarding elimination of the differential that currently exists, this issue was briefed to and discussed with the 5th QRMC Steering Group. The main pros and cons on the differential issue were presented as follows:

For Maintaining the Differential

1. An assumption that the rationale of the Hook Commission (1948) is valid today. Thus,

- special pay must be in proportion to basic pay to provide for added responsibility;
- higher paid and more highly trained personnel need a greater dollar inducement;
- officers are usually given greater responsibility; and
- with respect to flying, death rates for enlisted personnel are consistently lower than for officers.

2. The responsibility shouldered by officers and the added dollars spent to train them in the modern military is a sound argument.

3. It is necessary to provide an appeal for the pay to induce officers to serve in hazardous skills today more than in 1948 when enlisted personnel were not paid as well as in the AVF.

4. No problem exists in the current system with respect to the officer/enlisted differential, except that the rates have been allowed to erode to unacceptably low levels. Thus, to change something that has worked for 35 years is unsound and will adversely impact officer morale.

For Eliminating the Differential.

1. All personnel, officer and enlisted, experience the same hazards.
2. One can never really compensate for risk of life, no matter the level.
3. Basic pay and bonuses are adequate to cover any differential.

4. The Hook Commission rationale was based primarily upon an examination of the needs of the aviation and submarine communities. Times have changed and those communities now have their own separate career incentive pays and bonuses.

5. Most hazard-related pays now cover skills that are not necessarily career oriented (across all Services); hence, a differential is not necessary for purposes of retention. However, exceptions may occur and should be individually addressed, as required.

6. QPMC field interviews with both officer and enlisted personnel indicate "same rate for same risk" is perceived as equitable in the hazardous duty areas.

Upon completion of the Steering Group discussion, the decision was made to eliminate the officer/enlisted differential for the seven Hazardous Duty Incentive Pays in question.

SUMMARY OF RESPONSES

Officer/Enlisted Differential

<u>Department</u>	<u>Comments</u>
Army	Strongly favors elimination of differential.
Navy (includes Marine Corps)	The Navy believes that for duties requiring the assignment of volunteers exclusively, rates should be scaled by grade. For duties in which the assignment of non-volunteers is acceptable, elimination of the differential is appropriate.
Air Force	Favors retention of the differential in all instances except Flight Deck Duty, Toxic Fuels and Toxic Pesticides, believing that incentive is an important factor in all pays, including HDIPs and the pay differential is based on mission-related activities and responsibilities and not predicated on an assumption or quantification of risk.
J-1	Strongly favors elimination of differential for certain HDIPs.
Coast Guard	Favors elimination of differential in several cases; defers to judgment of QRMC when CG does not use pay; recommended "Hazardous Duty Incentive" be dropped in case of Flight Deck because it serves as recognition for extra hazards not necessarily on a volunteer or career basis.
NOAA	Favors elimination of differential in some cases and defers to using services in others.
PHS	Favors elimination of differential in all cases.

NOTE: Departmental comments were summarized from responses to the various S&I issue papers and comments during Steering Group meetings.

VI. FIELD INTERVIEWS

- A. Schedule. Field interviews were scheduled for the purpose of providing the QRM C staff the opportunity to discuss as many of the S&I pays as possible by visiting as many locations as time would permit. It may be noted that a greater number of Navy than other Services installations was visited. That is because the Navy is the largest user of S&I pays, therefore, it was necessary to visit more Navy stations in order to obtain a clear understanding of Navy S&I pay utilization. The field interview schedule is located on page 928.
- B. Selected Comments. Only a representative sampling of servicemembers' comments are presented here. A more detailed version of the analysts' interview notes, covering the numerous issues discussed during each of the field trips, may be found in the 5th QRM C background materials, Volume III-A. Comments begin on page 929.

A. SCHEDULE

<u>MONTH</u>	<u>DATES</u>	<u>LOCATION</u>	<u>ANALYSTS</u>	<u>PAYS</u>
DEC	2	Andrews AFB (AF & NAVY)	Coffinger Hunter Fayne	ACIP AOCP
DEC	3	Navy Annex	Coffinger Schmauss Murphy Seletsky	SRB Proficiency
DEC	7	Dover AFB	Hunter Fayne	AOCP ACIP EB, Flight Pays
DEC	8-10	Norfolk Naval Station	Schmauss Murphy Vaughn	Nuclear, Submarine, SRB, EB, Sea, Responsibility
DEC	10	Bethesda Naval Hospital	Seletsky Hunter	Health Prof.
DEC	13	Ft. Myer	Seletsky Fayne	Enlistment Bonus
DEC	14	Patuxent River Naval Station	Coffinger Hunter Fayne	ACIP, AOCP, Flight Pays
DEC	16	Hoffman Bldg	Schmauss Seletsky Murphy	SRB Proficiency
JAN	10-12	Ft. Bragg, Cherry Point Camp Lejeune	Seletsky Fayne	Parachute, ACIP, AOCP, SRB, Proficiency, EB, Flight, EDD, Responsibility, Health Prof.
FEB	7-9	NAS Norfolk and Oceana, Langley AFB, Little Creek CG Air Station	Hunter Vaughn	ACIP, AOCP, Diving, Sea, EDD, Flight, SRB, Responsibility, Flight Deck, Parachute, Health Prof., FSA
MAR	14-18	Naval Station San Diego, Sub Base San Diego, El Toro, March AFB, Miramar, Amphib. Base, LA Air Force Station, NAS North Island, Norton AFB, Edwards AFB	Schmauss Murphy Fayne	Sea, ACIP, AOCP, Submarine Diving, EDD, Proficiency, SRB, EB, Flight, Flight Deck, Responsibility, Eng. & Sci., Exp. Stress Parachute, FSA, Personnel Exp., Air Weapons Control
APR	11-13	Ft. Jackson, Charleston, Kings Bay	Seletsky, Murphy	Nuclear, Sea, Submarine, EB, SRB, Proficiency Health Prof., FSA

B. SELECTED COMMENTS BY SERVICEMEMBERS

1. General Comments Pertaining to S&I Pays:

- (a) Prefer lump-sum bonuses to anniversary payments.
- (b) Officer and enlisted personnel exposed to the same hazards should receive the same level of Hazardous Duty Incentive Pay.
- (c) Persons qualifying for and performing duty in more than one hazardous duty skill should be paid more than one Hazardous Duty Incentive Pay.
- (d) Personnel policies, including the administration of pay, are as important as the pays themselves.
- (e) Many senior enlisted personnel perceive that the S&I Pays are structured in favor of the lower enlisted at the expense of the senior.
- (f) S&I Pays are not a substitute for poor leadership and questionable personnel policies.
- (g) An apparent lack of understanding exists in the field about the purpose of S&I Pays; members not receiving any believe the pays should be spread across the entire force.
- (h) In jobs where the hours are such that the individual cannot seek part-time employment, recipients view the pay as helping make ends meet.
- (i) There exists very little understanding about why pays are structured as they are.

2. Members Comments About Specific S&I Pays:

(a) Air Weapons Control Officer Flight Pay

- believed they deserved extra pay because of unstructured operational tempo, family separation, and undesirable duty location
- aware that consideration was given to treating these non-rated officers as a rated resource, without designating them as such, so rates were structured similar to ACIP

(b) Demolition Duty Pay

- many members enter this career field for the challenge and excitement, not the money

- officer and enlisted personnel should receive same pay for same risks

(c) Experimental Stress Duty Pay

- should pay for risk/exposure, not by grade
- people would not volunteer for this duty without extra pay

(d) Flight Pay (Crew/Non-Crew)

- all non-crew aviator personnel in aircraft exposed to same hazard, so should receive same pay
- not enough compensation for risks involved
- can make more money moonlighting
- perceptions of unfairness drive people out, not money
- rates too low, have lost incentive value
- need greater pay differences between grades (Crewmember)
- junior people should get more since they fly more
- pay makes up for
 - slow promotions
 - money lost during TDY/TAD (per diem)
 - missed meals

(f) Parachute Duty Pay

- all persons should be paid the same
- jumpmasters should receive special consideration because of their responsibilities
- most enlisted personnel do not jump for the money but it is a retention factor once they enter the career field
- most officers do not jump for the money; jump duty is viewed as a career enhancement

(g) Toxic Fuels and Propellants Pay

- \$83 per month is not an incentive for this kind of duty
- all fuel work is hazardous, but only certain fuel duty is being paid
- some would not do this duty if they were not ordered to do so

(h) Toxic Pesticides and Dangerous Organisms

- \$83 per month is not an incentive for this kind of duty
- people don't fully understand what they are being exposed to

(i) Aviation Career Incentive Pay (ACIP)

- provides only a base level of pay for aviators
- other factors affect retention, i.e., more crew rest, better crew treatment
- job satisfaction often more important--like to be treated as professionals--concerned about assignments and family separation
- most did not enter flight training with idea of going to airlines but over half would do so if airlines begin hiring again in spite of higher ACIP rates
- ACIP system much better than "old" Flight Pay system

(j) Aviation Officer Continuation Pay (AOCP)

- should be lump sum
- many aviators believe drawing ACIP at the reduced rate in conjunction with AOCP constitutes their financing their own bonuses
- bonuses would not be effective if economy was better and airlines were hiring
- predict morale problems if all aviators not given bonuses (refers to pay-by-type-aviator proposal)
- personnel management policies carry equal weight with money in retention decisions
- bonuses keep flyers in the Navy but not necessarily to fly
- pilots tend to want to fly--dissatisfied with staff work

(k) Special and Continuation Pays for Dentists

- any cut in dental pays would cause many dentists to leave the military
- current freeze of rates at the FY80 level will be detrimental to attraction and retention of dentists in the future

(l) Diving Duty Pay

- Special Warfare personnel who maintain qualification for Diving Pay and two HDIPs (demolition and parachute) should be paid for all three
- initial draw to diving duty involves challenge of job and excitement more than extra pay -- may change now that money providing a greater incentive as diver gets older

(m) Engineering/Scientific Officer Continuation Pay

- concerned that because pay is based on academic degree, even if two people are doing the same job equally well, one might receive the bonus while the other might not
- individuals believe scholarship and advanced degree programs are best non-monetary recruiting and retention incentives
- individuals very knowledgeable about civilian salaries, duties and responsibilities

(n) Enlistment Bonus

- bad economy drove many into the Services
- those who did not take the bonus did not want the extra commitment
- many would not have enlisted in a critical skill without the bonus while others did not know their skill had a bonus until after they enlisted

(o) Nuclear Officer Pays

- \$1,000 additional pay for Continuation Pay vs Annual Incentive Bonus not incentive to commit for 4 years
- nuclear officer believe they have more difficult duties than other officers

- Accession Bonus works well with Nuclear Power Officer Candidate, NROTC, and USNA
- career pattern very limited
- some felt the purpose of the bonus was compensation for time invested
- about half who leave Navy avoid civilian nuclear power --it has poor growth and stability
- nuclear surface officer consider their duty as difficult as nuclear submarine officers

(p) Medical Officer Pays

- many physicians who were leaving the military stated that the Services could not pay them enough to stay
- considerable dissatisfaction with personnel policies and administration of career fields rather than with pay only
- some resent the fact that not all doctors receive certain special pays

(q) Proficiency Pay

- Special Duty Assignment Pay does not provide incentive
- career enhancement of special duties is just as important as special pay
- Shortage Special Pay has little or no effect on individual's decision to reenlist

(r) Selective Reenlistment Bonuses

- should be paid in lump sum, some indicated that they would reenlist for a lower multiple if paid lump sum
- contractors coming aboard ship take good people; SRBs help retain
- need to incorporate some kind of quality standard in SRB program
- 90-day SRB window is too small for many

- inconsistent administration of SRB frequent complaint -- number of skills, multiples, reenlistment window change too rapidly
- duty location often cited as more important to retention than SRBs
- frequent complaints about tax withholding of SRBs
- people who cross-train aren't really qualified in field for a couple of years but still draw higher SRBs in the new specialty (complaint by experienced member)
- many people are told their specialty is critical but don't get SRBs. Most services have a dual system for rating the criticality of skills - one for training/retaining, and another for bonus determination. Many enlisted people are confused.
- several comments from senior personnel preferring the old VRB or RRB system
- for some who would reenlist anyway, the bonus encouraged longer commitment, but works in reverse if there is a bonus ceiling

(s) Career Sea Pay

- Sea Pay makes up only for the loss of subsistence and quarters for single personnel--would need to be increased to provide a true incentive
- should be a greater dollar difference between longevity steps
- grades E-1 to E-3 and O-1 to O-2 should receive Sea Pay because they undergo the same rigors
- Sea Pay goes a long way toward improving the morale of the seagoing community, giving them equal status with other naval communities
- Sea Pay is a good incentive

(t) Submarine Duty Incentive Pay

- helps compensate for long hours and long deployments inherent in submarine duty
- nuclear retention low because of nuclear administrative burden

- frequent comments from officers, "No honorable way to get out of nuclear or submarine community," enlisted expressed similar opinion
- submariners may be setting up a financial base to have when they get out; works to keep borderline people but aids others in civilian transition
- sub pay is good; now getting out because of job dissatisfaction, hours, family separation
- sub pay not adequate for the hardships of sub duty

(u) Certain Places Pay

- rates are a joke--would not cause anyone to volunteer for overseas assignments

(v) Family Separation Allowance (Type II)

- current rate is so small that it is meaningless
- current rate not realistic
- allowance creates friction between married and single personnel

(w) Responsibility Pay

- does not provide an incentive but does add to prestige of command
- commanding officer afloat in pay grades O-1 and O-2 should receive the pay

(x) Special Pay for Optometrists

- this pay is the only incentive left to join the Services now that the scholarship is not being offered
- \$100/month too low to serve as an incentive; comments range from "it's better than nothing" to the pay's purpose is to serve as "recognition of professional status" only.

VII. SUMMARY OF RESPONSES

Final Draft - Volume III

<u>Department</u>	<u>Comments</u>
Army	Makes minor data changes and suggests minor changes in other areas for clarification and consistency.
Navy	Clarifies minority positions; comments on wording in selected sections of SRB; recommends comment on Schroeder Amendment pertaining to Hostile Fire Pay; offers a few technical corrections; states concurrence on QPMC recommendation to study wartime and quality issues further.
Air Force	Restates and clarifies minority positions on certain Hazardous Duty Incentive Pays and elimination of forgiveness of obligated service pertaining to SRB; recommends elimination of QPMC recommendation to reevaluate effectiveness of ACIP. (Note: QPMC recommends reevaluation of rates only.)
Coast Guard	Concurs.
PHS	Concurs. Provides minor data addition and general changes for clarity.
NOAA	Concurs. Requests minor changes to a legislative entry and position on Flight Pay.
JCS	Concurs. Recommends Hostile Fire Pay be reviewed and updated in light of 1984 DoD Authorization Act (refers to Schroeder Amendment.)

Note: All changes for clarification and consistency pertaining to minority positions, data, and technical corrections have been made. A comment regarding the Schroeder Amendment has been added to Hostile Fire Pay.

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